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A PERSONAL NARRATIVE OF THE WRECK OF THE "VANDALIA," AT SAMOA, MARCH 16, 1889.

THE "Vandalia" was wrecked in the harbor of Apia, on the 16th of March, 1889, in the gale which wrecked also the flag-ship "Trenton," the U. S. S. "Nipsic," and H. I. G. M. S. "Adler," "Olga," and "Eber." Of the above-named vessels the "Nipsic" and "Olga" were gotten afloat and are still bearing the flags of their respective nations.

This narrative must bear a personal character for a reason which will appear during its progress, and as my means of observation up to the time of going on deck were limited to my immediate surroundings, I write in the first person.

During Friday, the 15th of March, 1889, the weather had turned stormy, and gusts of fierce wind weighted with rain came down over Apia Mountain, indicating a gale of wind on the south side of the island, but as one result of the direction of the wind was a perfectly smooth sea in Apia harbor, but little fear was entertained of the outcome, and, although the barometer kept going down in a most abnormal manner, the aspect of the weather was not regarded as at all dubious. Towards night, however, the rain increased in violence and the wind shifted from south to north and east, blowing directly into Apia harbor, and, as the barometer continued slowly falling, orders were given to secure everything for bad weather, so that by sundown of the 15th we had sent all the light yards down, secured topmasts, secured

the battery for sea, and lighted fires under four of the six boilers. One other boiler was already in use for distilling.

Everything was in good condition in the engineer department, and at ten o'clock that night, when I turned in, no thought entered my mind of the momentous events the next day had in store for the ship.

Once or twice during my sleep I waked up sufficiently to note that the motion of the ship was somewhat more irregular than was usual even in Apia, where often a heavy swell makes in from the Pacific Ocean of sufficient strength to make it unsafe to keep between-deck air-ports open. At one o'clock Chief-Engineer Greene called me to relieve him, which I did, and took my station in the engine-room within a few minutes after being waked up.

The chief was in the ward-room, and sitting not far from him was Paymaster Arms in his night-gown, and to my mind, as I passed through on the way to the engine-room, looking very much alarmed. I never saw the paymaster again, save a momentary glimpse through a hatch-hood about daybreak of that day. The engines were running slowly when I reached the engine-room, and after satisfying myself that everything was in good order I took my place on the upper platform, from whence I could overlook nearly the entire department.

The motions of the ship at this time were very violent, so that, between pitching, rolling, and bringing up against the anchors, a firm footing was next to impossible. Things went on in this way without notable incident until about four o'clock, when the wind seemed to increase in violence, the sea rising at the same time in direct proportion, and some one from the deck in answer to my inquiry for "news" said that one or two merchantmen had apparently foundered at their anchors, and that the "Eber" and "Adler," two German men-of-war, seemed to be in danger of going on the reef, but that it was too dark to speak with much certainty of anything.

About 5.45, or perhaps near six o'clock, a tremendous shock was felt, and for an instant we all thought below that the ship had struck. Almost before, however, the idea could be put into words an immense mass of water came pouring down through the engine-room hatch, deluging everything and nearly carrying me off my feet into the moving machinery below. From this we understood that a sea had boarded us from forward, swept aft with almost resistless force, filling the decks more than hatch high with water, and finally drowning out the cabin, after throwing every one about the decks on their "beam ends."

One of my men, an old oiler, named John Myers, was on the topgallant forecastle at the time, and before he knew what had happened to him found himself tossed aft in the swirl of water, bringing up against the cabin bulkhead more scared than hurt. From this time we were boarded by seas continually, and the engine-room was flooded

with sea water so frequently that an attempt to escape the deluge was hopeless, and, divesting myself of everything save my shoes, an undershirt, and pair of trousers, I stood in my place of vantage, overlooking everything in the department, giving orders when necessary, watching the steam-gauge, the clinometer, and waiting for events.

Gradually, as the situation grew more desperate, the steam in the boilers was increased until a final pressure of sixty pounds was reached, and the speed of the engines was, from time to time, augmented, and by observation and the reports of my men from hour to hour I was able to inform Captain Schoonmaker and Lieutenant Carlin, who occasionally appeared at the engine-room hatch, that everything was going on satisfactorily, and that I had no reason to fear any untoward event in my part of the ship. I have characterized the motion of the ship as "violent" when I entered the engine-room at one o'clock, but that word is inadequate to express the state of affairs as daylight began to clear the scene for observation.

A constant grip of something was essential to safety, and an occasional lurch of unusual force would cause even the firmest grasp to waver for a moment.

Soon after daylight word was passed down to me that the "Nipsic" was ashore, the "Eber" on the edge of the reef, and the "Adler" apparently drifting towards the same perilous point. So far, I was told, our anchors had not dragged, and if the engines held out it was thought that no great danger need be feared for the "Vandalia."

As the day wore on, however, the "Olga" and the "Calliope," German and English men-of-war respectively, seemed to be running amuck around the harbor, and to avoid collision with the former, which would have been fatal to both, our chains were veered to their full extent, and that seemed the turning-point in our fight for life. Beginning at that time, I believe, the "Vandalia" commenced dragging her anchors, and as every fathom dragged brought the two anchors nearer and nearer together, lessening their practical holding power, and as the gale instead of showing signs of slackening its force increased to a hurricane, the sea keeping pace with the wind, it became evident that we were fast approaching a desperate strait.

As the ship would roll and careen until the deck was almost perpendicular, from my vantage in the engine-room I could catch glimpses of the sea, the weather, and whatever else could be seen in the few seconds offered for observation. During one of these glimpses I saw a ship almost on top of us, pitching and tossing like an egg-shell, and at the same instant I saw her keel as far aft as under her mainmast, by which some idea can be formed of the terrible state of the sea. This vessel was the English warship "Calliope," and a moment after a rush of our men forward past the engine-room hatch on deck indicated some approaching calamity, and a fierce shock, shaking the ship

from stem to stern, told that the "Calliope" had struck us. The blow threw every one from his feet, and it seemed as though some fatal injury must have been done to one or both ships.

But as our starboard quarter-galley was the only sufferer, and as I saw the "Calliope" a moment later on the port beam, it was evident that the end was not yet come. One of the doleful effects of this collision, however, was the breaking of a water-gauge glass on one of the boilers, and as the steam and water poured out under a pressure of sixty pounds it became quite an undertaking to shut it off. For some time this could not be done, for it must be understood that the motion of the ship was so violent that it was almost impossible to keep one's feet, even with something to hold on by. So, fearing a catastrophe and being unwilling to assume any extra risks, I ordered the fires hauled from that boiler and gave the order to disconnect it from the rest of the battery. The straining of the ship, however, had been so great that the proper valve could not be operated, and for a while it seemed as though disaster was about to overtake us for lack of steam, the boiler operating as a sort of condenser for part of the steam formed by the other boilers. By the time all these events had occurred, and the steam pressure had fallen in all boilers to twenty-seven pounds, the accident was repaired, fires relighted in that boiler, and for the remainder of the time, and until the ship struck, the engines worked with a steady pressure of sixty pounds. During all these hours it must be borne in mind that we had had nothing to eat or drink, for the decks were full of sea-water, the galley was afloat, the sea had made its way down the hatches, and spoiled the drinking water in the ship's tanks, so my men found themselves in desperate straits from hard work, heat, hunger, and thirst. Not a man, however, showed the white feather, but every soul, from the machinist, Gibson, who stood so faithfully at his post, to the coal-heavers in the bunkers, did his duty promptly, obeyed every order with alacrity and intelligence, and showed from the beginning that disposition to obey orders, which kept them at their posts until I ordered them to leave, after the ship struck. Some of the men, especially one or two of the water-tenders, began to show signs of giving out, so about 8.30, it must have been, though, to tell the truth, my idea of time during that forenoon is somewhat hazy, I succeeded in gaining access to the surgeon's dispensary, where I got sufficient stimulants to serve out about two ounces to each of the men in the fire-room, who seemed in need of it, and the effect, without exception, was good.

And so the day wore on, the pangs of hunger and thirst added to the other miseries of the occasion. An occasional jerking motion told that the anchors were dragging, so it seemed but a question of time when the "Vandalia" would follow the "Nipsic," "Adler," and 'Eber." The last-named vessel had entirely disappeared, while the

"Adler" was high, but not dry, on the reef, on her beam ends, the sea battering her bottom to pieces with every wave.

Several times during these perilous hours I heard such blood-curdling messages from the deck as this: "For God's sake, Webster, give her more steam: we're lost, we're lost." Then again: "Open her out; we're on the reef; go faster, go faster." From Captain Schoonmaker and Lieutenant Carlin, however, I heard nothing but an occasional inquiry as to the situation, and once I remember the captain asked how long I could keep up the speed at which the engines were then running, and my reply that I could keep it up all day seemed to afford him much satisfaction. This was the last time I saw him, for not long after this the final catastrophe came. During the morning, and probably not far from 9.30, one of the sailors shouted down the hatch that the "Calliope" was trying to put to sea, and we all felt relieved, for up to this time she and the "Olga" had been like bulls in a china shop, smashing into everything left afloat in the little harbor.

As will be perceived, my record so far has been limited to the few events occurring in my especial domain, the engine-room, and to such hasty glimpses caught of the scenery as the rolling of the ship offered, so my account thus far contains no very stirring episodes.

By these glimpses I could see that the air was thick with blinding spray and spoon-drift, and, as I had cause to know later on, the water was thickly charged with sand brought from the bottom through the violence of the waves and the force of the wind.

Ten o'clock approached, and from various signs it became apparent that the final event was not far off; but still the engines maintained their regular speed, still I was able to report "no water in the bilge, everything working well," and still my men clung to their posts without a murmur or a whimper.

Several of the marine guard, headed by Sergeant Coleman, came down during the forenoon as volunteer firemen and coal-heavers, and, to their credit be it said, they stayed at their posts to the very last, only going on deck with the rest of the men when ordered to do so.

And so the minutes flew by, until about 10.30 o'clock, with a crash which sent everybody sprawling, the "Vandalia" struck bottom and in an instant it seemed as though pandemonium was let loose. The roaring of the gale, the lashing of the waves, and the loud cries of command on deck were almost overpowered by the creaking and groaning which seemed to come from every timber in the ill-fated ship. The order to stop the engines was hardly given and obeyed before a second order was bellowed down the engine-room hatch to "abandon ship,"—that most terrible phrase. Here the discipline and steadiness of the engineer department showed itself, for as soon as the order to stop the engines was given everything was done exactly as it would have been had the ship been coming to anchor, and when I went into the fire-

room to give the order to abandon the ship the men were still there, and only left in obedience to command. Passing through the fire-room, I saw that several of the glass water-gauges had been broken by the shock of going aground, so that it was impossible to live there, but I was able to see that every man was out of the department before I tried to make my escape. Before going on deck I saw every part of the engine-room and fire-room, and sent every man on deck I saw. Subsequent events proved that everybody got on deck in safety.

On my way up the engine-room ladder from the fire-room I rapidly opened one of the main safety valves to prevent an explosion,—a needless precaution as it turned out,—and then hesitated for an instant whether to try and save anything from my room.

Of course, it must be understood that all of these events occurred in less time than it takes to write them, for the ship was rapidly filling with water, and the sea was making a complete breach over her.

Several times during the morning it had occurred to me that it might become necessary to attempt to reach the deck through the engine-room hatch, so to prepare for the struggle which must then ensue I had slipped my naked feet into a pair of unlaced shoes, which could be kicked off at the proper moment. But, as has been seen, resort to such an extremity was not called for.

Before going further into the narrative portion of this recital an account of a few incidents during the hours from 1 to 10.30 A.M. may not be out of place. Many times during the latter part of the forenoon the pitching of the ship was so violent that the screw would be lifted entirely out of water, and the engines, relieved of all load except their own friction, would go tearing around at a terrifying velocity until the stern, settling into a wave as the bow reached cloudland, the instantaneous increase of load on the propeller would cause the engines to stop quite still, on one occasion for more than ten seconds, when they would resume their normal speed until another avalanche of water would come over the stern.

From the manner and frequency with which the engine-room was deluged with sea-water I judged that during most of the forenoon the ship must have been drifting broadside to the wind and sea. Subsequent events confirmed this. In addition to the onset of the volumes of water pouring into the engine-room, those who, like myself, were compelled to weather the storm the best we could were almost suffocated by the quantities of steam given off by the various pipes and portions of the engines deluged with water which were hot enough for the purpose, and it seemed once in a while as though we must abandon our posts from this cause alone.

Can one imagine a worse combination of circumstances than this? A helpless ship drifting on a reef before a hurricane of wind, the engine-room alternately filled with blinding water and suffocating steam,

almost no prospect of escape should she fill before striking, and, above all, almost total ignorance of the situation on deck. Fortunately the very inability to know the desperate straits towards which the ship was speeding was, perhaps, a good cause for the courage and lack of panic exhibited by the engineer force under my command. At all events the idea that we were like rats in a trap, down below as we were, never seemed to strike any one of us. And now, the last duty having been performed and all my men being well on deck, I come to the period of my own escape to the upper air, and, as I fondly hoped, to safety and the companionship of my fellow-officers. During all the hours from the time I entered the engine-room until now I had held no communication with any of the other officers except through the engine-room hatch, and, mingled with the reassuring words and looks of Captain Schoonmaker and Lieutenant Carlin, were the direful predictions, objurgations, and alarming words poured through the same opening from various others on deck, who were far from being so cool and hopeful as those two officers.

My final struggle was determined by the fact of the apparent impossibility of getting on deck by way of the after hatch, the water pouring over the stern and port side of the ship in such volumes that I felt the desperate condition of my affairs, and, guided by what little light came down the fore hatch and accompanied by a fireman named Melville, I struggled forward on the berth-deck, the violent motions of the ship as she thumped the bottom with every sea throwing us to the deck every few feet as we stumbled onward. On my way towards the hatch I noted the fact that the berth-deck was being filled with a blinding mist, which must have come from the pipe supplying steam to the capstan-engine under the topgallant forecastle, but through the dim light I recognized Ensign Heath, who had come below for some purpose in connection with his duty. Determined that no reflection should rest upon my memory as an officer in the event of this being my last day upon earth, I called Heath's attention to the fact that all of my men were out of the engine-rooms and fire-rooms and requested him to remember this to my credit should he be my survivor. He hurriedly promised to remember my request, and, in point of fact, reminded me afterwards of my reporting to him under such circumstances the fact that the engineer department was under discipline and obedience to the bitter end.

Reaching the hatch immediately abaft the break of the forecastle, I managed to scramble on deck not far from the galley, and in common with every one else in my neighborhood seized a lashed hammock, many of which were under the forecastle, as a sort of life-preserver at the last extremity. Many of the crew were huddled together under the starboard side of the forecastle and for a few minutes it seemed as though we were in a place of safety, for although the water was pouring

over the topgallant forecastle and threatening to engulf the ship with every surge, the spar-deck was comparatively free of water, probably two feet deep, and the port forward pivot port still maintained itself against the blows of the sea.

Soon, however, as the ship settled more and more, and as the sea rose with each interval of time, the port bridle ports were stove in, the port pivot port was carried away, and before we could realize what had happened we found ourselves up to the neck in water and a wild scramble began for a place on the topgallant forecastle.

Casting aside my hammock as a needless incumbrance, I made a dash for the starboard ladder leading to the forecastle, but while doing my best to escape from the beating waves, which all at once seemed to take complete possession of the ship, I lost my footing, was cast headlong into the waterway, and in my wild struggles for something to hold fast to I must have clutched ropes or other objects in such a way that pretty nearly all of my finger-nails, softened as they were by the hours of soaking they had undergone, were turned back, all unconsciously to myself at the time, and, as I had kicked my shoes off at the first sign of a struggle for life, my feet became badly bruised during my struggles; and when at length I managed to secure a rope made fast at its upper end and clambered to the topgallant forecastle I found I had been considerably bruised, but so far as I could ascertain no bones were broken.

For the first time I was able to see for myself the situation so far as the "Vandalia" was concerned.

The majority of the officers were aft on the poop-deck, some of the men had gone aloft, some were in the rigging, and not a few were in the same situation as myself. Once in a while a man would take his life in his hands, and, jumping overboard, make a brave attempt to reach the shore. I believe, without exception, these men were drowned, for the sea was constantly increasing, while the strength of the men were as steadily growing less. A short distance inside of the "Vandalia" lay the "Nipsic," driven up on the beach and abandoned by her crew and officers.

We were lying approximately broadside to the beach and about two hundred and fifty yards distant, where we could plainly see the natives and men and officers from the "Nipsic" passing to and fro in vain endeavors to render some assistance to their endangered fellows. Soon the ship began to fill with water and a miscellaneous quantity of floating objects came pouring up through the hatchways,—chairs, mattresses, pieces of lumber, hammocks, all the *débris* of a wrecked ship, soon filled the decks, and, floating away over the bulwarks, which by this time were just awash, covered the sea with floating wreckage, dangerous to swimmers, and indicating the sad fact that the "Vandalia" was a doomed ship.

Our situation was desperate to the last degree, and as the seas began

pouring over the topgallant forecastle it became evident that a higher perch was necessary, so, with Hobson's choice before me, I clambered to the fife-rail of the foremast, and, securing a position on the lee side of the mast, prepared to hold on for dear life.

The position was one filled with peril, for the seas, mountains high, engulfed all that part of the ship every few minutes, and as I was standing barefooted on the coils of rope cast over the pins of the fife-rail, one bare arm thrust through the starboard Jacob's ladder, the other hand grasping some of the running rigging leading aloft, I found my situation sufficiently painful. With me and in precisely the same plight were five or six of my men, prepared to "stand by the wreck" while life endured.

Some distance up the starboard fore rigging crouched Assistant Surgeon Cordeiro and Lieutenant Culver, while somewhere aloft, and exposed to the full fury of the blast, Surgeon Harvey was clinging, naked from the waist up, the fierce gale having torn his shirt off some time during the forenoon.

Soon after acquiring a foothold on the fife-rail the ship began to heel slowly over towards the sea until it seemed certain that she was going to capsize or be beaten to pieces by the waves, which grew in violence the longer the gale continued.

My heart sank within me as this thought passed through my mind, for in the face of such a sea as was then running, filled as it would be with the most dangerous wreckage, the chance for rescue was too small to be reckoned on.

Just as it seemed that the next sea would tear the ship to pieces, the movement stopped and slowly began to retrograde, until at length, reaching approximately an even keel, the ship settled on the bottom, and that fear at least was over.

Slowly the hours passed, and to all appearances the gale was no nearer an end than at the beginning, while the sea, steadily increasing, began to sweep an occasional man overboard, and to go overboard now meant certain death.

Some of our men tried to swim to the "Nipsic," and once in a while the attempt was successful, but the larger part of those trying the desperate venture were carried by the current out past the range of vision, and with two exceptions were drowned long before reaching any considerable distance seaward.

These two exceptions were Chief-Engineer Greene and Naval Cadet Wiley, both of whom were drifted sufficiently near shore to be rescued by the Samoans through the surf. And here it may be proper to add one more to the many testimonials of the bravery, judgment, and skill of these Samoan warriors. Apparently with no thought for self or fear of death, these brave savages stood ready to peril their lives in rescuing the unfortunates cast upon their shores. And it is

worthy of record, in this connection, that during the continuance of the gale no distinction was made between friend and foe, all feeling of enmity being set aside in the interests of a true humanity.

During all of this day, which it seemed would never end, the rain poured in torrents, the spoon-drift between the seas flew in sheets, and every few minutes a wave, high enough to hide the mast-head, would engulf us, and during its progress all we could do was to hold on, stop breathing, and wait for its passage.

The hours grew interminable, and as the sun was invisible no correct notion of time could be formed, and it was only when distinct objects began to assume indistinct outlines, indicating the decline of day, that we were aware that we had been clinging for dear life nearly eight hours. During this time one of the men at my side seemed to lose his courage, and as each sea swept over us with increased force he became dazed and hopeless, and finally, turning to me, said, "The next sea that comes I am going to let go," and as the wait was not very long between seas, he soon disappeared over the side and was seen no more. Once during the afternoon the "Vandalia" swung sufficiently close to the "Nipsic" for several of our men to essay escaping to the latter ship by way of the foreyard, which lay across our forecastle, its starboard end touching the "Nipsic" at this time. A few escaped in this way, and then, the ships drifting apart again, no further opportunity for rescue in this manner offered itself. A second-class fireman belonging to the "Vandalia," named Callarito, succeeded in getting on board the "Nipsic," and at once made arrangements to save as many lives as possible by letting down ladders, ropes, and boatswain's chairs to the water's edge, and was thus the means of saving several.

This man also succeeded in passing a line from the "Nipsic," by which a hawser was hauled across and made fast to the foremast of the "Vandalia," but no opportunity was afforded of constructing a traveling bight or breeches buoy on account of the heavy and frequent seas, so I think it was of no avail in saving any, and finally, through the motions of the two ships to and fro, the hawser was snapped in two.

While this hawser was still extended between the two ships, Mr. John Roche, our pay-clerk, came floating by, having either been swept overboard or made a desperate attempt to reach the beach, drifted quite near the ship, and, although pretty nearly exhausted, heard our cries to catch the hawser, and for a few minutes held on by one arm. The line, however, being in a continual state of see-saw, or alternate tautening and slacking, soon shook him off, and, folding his arms, closing his eyes, and without making another effort, he sank out of sight and was drowned under the very eyes of his shipmates. Several narrow escapes from drowning occurred during those weary hours, one man having been swept overboard twice, but each time he succeeded in

clutching some of the floating cordage hanging from the foreyard and so crawled aboard. He is still alive.

Once in a while our hearts would be cheered by an apparent lull in the tempest, or a tiny patch of lighter clouds would pass over, when we would imagine for a few moments that the gale had blown itself out. But no such good fortune attended us, and the only change would be a fiercer blast, a heavier sea, and a blacker cloud to quench what little hope remained, leaving nothing but that phase of courage called "grit." All efforts to send lines from the shore had proved fruitless,—the single attempt to send a line from the ship resulting in the death of the brave men who made the effort.

The after part of the ship was apparently breaking up, the cabin had been completely gutted, no figures could be seen aft except in the rigging of the mizzenmast, and the poop-deck looked as though ready to break adrift from the ship at any time, as it, in truth, did finally. With every surge of the ship the foremast would apparently almost unship itself from the keelson, in which event the chances for life of all those on and around it were very slim indeed. One notable thing struck me at the time, and that was the absence of all human cries or shouts during the whole day. Not a cry was given by the number of men who lost their lives during the wreck, and the only sound which filled the ears of the survivors was the roar of the wind, the crash of the waves, and the hissing of the foam as it came hurtling from the crests of the waves driven by the hurricane towards the beach; and so the day came to a close, and the end of the gale and rescue seemed as far off as ever. During the last hour of daylight the body of a drowned man washed upon the bridge just forward of the smoke-pipe, and one of the stiffened arms becoming entangled with a stanchion, he swung to and fro directly under our eyes, until at last an exceptionally heavy sea tore him adrift and the awful object disappeared over the rail to be seen no more.

By the violence of the waves our smoke-pipe was bent considerably out of the perpendicular, and stood as though ready for the final plunge; but it did not go overboard, and was used afterwards to replace the one lost from the "Nipsic." Of course every boat had long since been torn from its davits, and with the other floating objects from the ship served to line the beach for miles up and down the coast.

As the daylight faded away the outlook was certainly forlorn in the extreme. Although the weather was warm and the water, under ordinary circumstances, of an agreeable temperature, the submergences to which we had been subjected for so many hours seemed to have taken all the heat from our bodies, and the immediate effect of a sea passing over us was that of chattering chilliness, and before any degree of warmth would begin to pervade the body another engulfment would send the most atrocious chilliness through one, until it seemed as though

from very cold and stiffness one must let go. Few words were exchanged between us as we stood close pressed together, making what lee we could of the mast, and to tell the truth there was very little to talk about.

I remember thinking to myself, "What a lot I shall have to tell about if I am saved."

Darkness comes on apace in the tropics when the sun once goes down, and before we knew it the night had settled down, which seemed to have no promise of a daybreak to any of us. But relief was coming from a direction and in a manner little imagined. It must have been not far from seven o'clock in the evening when I descried the dark hull and few twinkling lights of the flag-ship "Trenton," of whose whereabouts we had been up to this time ignorant. If we had felt hopeless before, the appearance of the "Trenton" slowly dragging down on us filled us with despair, for but one result could happen should she come in contact with what was left of the "Vandalia,"—quick and total destruction. So the few faint hopes of clinging to the rigging until morning seemed dead beyond resurrection by the certainty of the fate bearing down on us from the gloom to windward.

The progress of the "Trenton" was very slow, and as at times the drift would seem to cease altogether, it may, perhaps, be imagined with what solicitude the approach of our destroyer was watched. Slowly drifting down before the wind and sea, the big ship loomed up against the waves which broke over her bows until, about eight o'clock, it must have been, she had approached sufficiently near to see figures in her rigging and on the rails. Soon a cheer came over the waves, given, we heard later, by order of Admiral Kimberly as an earnest of their appreciation of our desperate situation.

I think every man who heard that cheer must have shed tears. I know the little group of which I was one wept for a few minutes as though impossible to restrain the feeling which is difficult to describe. Before the flag-ship struck us, which she did finally, the order was given on board her to throw a rocket line across us, which was done, and in a few minutes a hawser was made fast to our foretopmast head, the other end being secured to the "Trenton." Soon after striking us, which occurred shortly after eight o'clock, the "Trenton" began to swing slowly around, bringing her nearly parallel to the "Vandalia, the sterns nearly touching and the bows separated by some forty feet or more.

As this took place hope began once more to find a place in the "Vandalia," for the flag-ship made an effectual breakwater against wind and sea, and a rescue seemed quite a near possibility. As soon as the hawser between the two ships was properly secured some of the sailors began going aboard the "Trenton" in that way, hand over hand, but on testing my ability to do the same I found sufficient strength was not left to make the attempt. Abandoning the place I had up to

this time occupied I clambered into the port forerigging, wondering in what way rescue and safety would come to me. Nor had I long to wait. The officers and men of the "Trenton," in spite of the fact that their ship was a wreck as well as the "Vandalia," used every exertion in rescuing us from the fate which seemed ready to overtake both ships.

About 8.30 my attention was attracted by the chief boatswain's mate of the "Vandalia," Winchester, calling out, "Here's a chance for you, boys," and, illustrating his words by crawling to our port foreyard arm, caught a rope thrown from the forecastle of the "Trenton" and was speedily on the deck of that vessel. Feeling that here was a chance I descended from my station in the rigging, and making my way to the end of the yard was fortunate enough to catch the bight of a line cast from the "Trenton," and in a second or two I swung violently against the side of that ship at the water's edge, without, however, breaking any bones.

Finding it impossible, with the remnant of strength left, to draw my own weight up the side of the vessel I managed to cry out my situation, when the man at the other end of the line drew me up a couple of feet, enabling me to get astride the torpedo boom. From there it was not a difficult task to clamber up through the starboard forechains by the aid of one of my coal-heavers, who had preceded me in this pathway to safety, and soon I felt comparatively safe on the deck of the "Trenton." My progress up the side of the vessel was made slow and painful by the sensation that there was barely strength left for the feeblest effort, and I remember the feeling of surprise at my inability to move my hands and feet quickly. They seemed made of lead, heavy and uncontrollable, and on stepping over the low rail to the forecastle of the "Trenton" my strength deserted me and I fell to the deck, unable to help myself for some little time. After a brief rest, however, I found my way aft in anxious search for water, for it will be remembered that the last opportunity those on the "Vandalia" had for food or drink had been at six o'clock on Friday evening, and here it was 8.30 o'clock Saturday evening, a period of not less than twenty-six and a half hours, without sustenance of any sort.

The rest of the story is soon told. The officers of the "Trenton," from the admiral down, vied with each other in acts of kindness, and, although in desperate circumstances themselves, should the gale continue much longer, we felt perfectly safe and thankful that things had turned out no worse. During the night the creaking and grinding of the "Trenton" banished sleep from the rescued, but about three o'clock Sunday morning the gale began to subside, and, as on account of the narrow entrance and reef-locked character of the harbor the sea speedily went down, by daylight the harbor of Apia was fast resuming its wonted calm, and the perils of the wreck were over.

Abler pens than mine have told of the weary waiting for relief to

come, and there remains for me but the task, which is a pleasure, as it is also a duty, of recording here the names of those men in my department who so nobly stood at their posts in the midst of appalling dangers for so many hours; obedient, zealous, brave, their names deserve imperishable record. But for the skill and attention to duty of these men the wreck of the "Vandalia" would have occurred sooner and would probably have been even more disastrous in loss of life. My official report, made to Lieutenant Carlin, commanding the survivors, records these names, which I here repeat:

Machinist Adam Gibson, Machinist J. B. Collier, Boiler-maker Charles Bowren, Oiler John Myers, Oiler Thomas Langon, Oiler James L. Fair.

The condition of things on board the "Trenton" while the half-dead survivors of the "Vandalia's" officers and men were being slowly rescued was far from cheering. The gale continued with steadily-increasing violence, the sea as a consequence growing higher and higher with each hour of wind, until it seemed at times as though we had but delayed the inevitable end and that our last hours were steadily growing nearer as the old ship groaned and staggered with each onset of wind and sea.

No lives had been lost on the "Trenton," but we learned for the first time, after getting on board, that the fires had been put out before noon, and that in spite of the steady drain of the pumps the water in the ship could not be reduced below the dangerous depth of some six or eight feet.

Every part of the ship was dripping with sea-water, and the appearance of the men and officers gave ample evidence of the terrible day of work and danger passed through. Every soul on board must have been soaking wet for hours, the fresh-water tanks were rendered brackish and unfit to drink through the terrible seas which had boarded the ship at intervals all day, and, as no fire had been possible for the same reason, nothing beyond a few sodden hardtack had been eaten by any one since the night previous. The ship was hard and fast aground a short distance to seaward of the poor "Vandalia," and every once in a while a sheet of foam and water would come pouring over the port hammock rail from stem to stern, deluging the decks and increasing the misery of those obliged to face the gale, the spray going as high as the cross-trees, and, as I remember, at times extending as far as what was left of the "Vandalia."

As was feared by those clinging to the rigging of the last-named ship, the collision of the "Trenton" had resulted in so demolishing the port chains and stays of the main- and mizzenmasts of the "Vandalia" that in less than forty-five minutes after the shock these two masts went by the board, breaking off a short distance above the deck and falling over the starboard side.

Fortunately no lives were lost by this occurrence, although several very narrow escapes were made by those who, from long exposure and consequent weakness, were partially disabled and almost incapable of helping themselves.

There were but few men forward, the larger part of the crew being aft at work on the pumps, essaying, as was found out later, to pump the ocean dry, a large hole in the stern allowing ingress of water many times faster than one pump could draw it out.

After having been dashed several times by the sea as it occasionally poured across the deck, I managed to get as far aft as the main hatch, down which I made my way in search of food and water. Several of the ship's officers passed me on the way, but I felt no surprise at not being recognized, for in the semi-darkness prevailing close inspection was impracticable.

Crossing the gun-deck, I passed the admiral's pantry, and experienced a pleasant surprise by being addressed by the steward, a Chinaman named Ah Fat, who exclaimed, "Hello Miss Lebs; you all light? S'pose you hungly?" On receiving an assurance that not only was I hungry, but dying with thirst, this Chinese Samaritan opened a can of mutton and poured out a glass of water from the small store remaining in the admiral's water-cooler, and, with the addition of a crisp hardtack, I felt comparatively comfortable. Nor did the good offices of Ah Fat cease here, for, noting the scant condition of my wardrobe, he promptly got a pair of pajamas and a Chinese blouse and undershirt, so that in a brief space of time hunger and thirst were somewhat appeased and dry clothes had taken the place of the sodden garments in which this eventful day had been passed. This kindness and attention arose from the fact that we had been shipmates on the "Iroquois," three years before, where he was the ward-room cook.

A few minutes after this feast in the admiral's pantry I entered his cabin, where were already Lieutenants Carlin and Wilson and Ensign Gibbons, all from the "Vandalia." Carlin was pretty badly bruised, having been knocked about a good deal during the day, and Wilson, after nearly losing his life in the attempt to escape from the "Vandalia" to the "Trenton," was stretched out on a lounge at the after end of the cabin in a complete state of misery, retching violently, and so weak as to be hardly able to stir.

The stern of the "Trenton" was on the edge of the terrible reef which she had skirted for so many hours while drifting down towards the shore, and as a frequent sea would cause her to surge and settle again on the bottom the most doleful groans and noises seemed to come from every timber of the doomed ship. These noises, added to the steady roar of the gale, the thunder of the waves as they struck the oaken sides of the ship, and the loud voices of command mingling

with the regular thump and thud of the deck-pumps, made a combination of noises easier to imagine than to describe.

About eleven o'clock, with an extra heavy surge and the rattle of a green sea on deck, the cabin air-port was partly torn from its fastenings, and in an instant the water came pouring into the cabin, effectually disposing of all sleeping on the deck.

For the first time I learned of the death of Captain Schoonmaker, Lieutenant Sutton, and the drowning of Paymaster Arms, the latter not having been seen for several hours previous to the wreck of the "Trenton."

I had seen Pay-Clerk Roche go down quite early in the afternoon, so there were four officers gone and no one knew how many of the crew.

The loss of Captain Schoonmaker left Lieutenant Carlin in command of the survivors, he having been the executive officer.

And so the night wore on, the gale showing no signs of abatement, while the sea, steadily rising, had reached a pitch when it seemed that no greater violence were possible. The waves were laden with sand from the bottom of the harbor, although the depth of the water was not less than nine fathoms (fifty-four feet).

The two articles of clothing I removed, when Ah Fat came to my assistance, were filled in every fibre with mud and sand, forced into them by the long buffeting of ten hours in the rigging exposed to every wave.

About three o'clock on the morning of the 17th of March, which was Sunday, the strength of the gale seemed to abate, and from that hour the violence of the sounds throughout the ship steadily decreased, and by daylight the great gale was over.

Before going further in my narrative of events it may be well to note the uniform kindness and hospitality of every one on board the flag-ship "Trenton." In spite of the increasing peril of the ship, the apparent certainty of the total wreck of the vessel before morning, the officers of the admiral's ship let no occasion pass of offers of comforts, dry clothes, and assistance of every sort at their command.

The gale having abated, by daybreak the sea had subsided, and instead of the tumbling mass of water and the howling wind to which our eyes and ears had for so many hours been accustomed, the long, regular swell from the Pacific Ocean alone told of the recent hurricane, if we except the sights which met the eye in every direction on reef and sea and shore. Directly beneath the starboard side of the "Trenton" lay the submerged "Vandalia," the foremast still in position, but most of its rigging carried away, the stumps of the main- and mizzenmasts barely appearing above the water covering the entire ship, save a bit of the poop-deck rail and a portion of the topgallant forecastle; off on the port quarter lay the German man-of-war "Adler"

on her beam ends high up on the reef, her propeller and rudder gone, much of her copper stripped from her bottom by the violence of the waves after being wrecked. In close proximity to the German ship were great blocks of coral broken from the reef during the storm and now left by the waves as landmarks of the force of the terrible sea prevailing. In various places the masts or some portion of the upper works of several merchant vessels bore mute and sad evidence of loss of life and property. Directly astern of the water-covered "Vandalia" and not far from the starboard quarter of the "Trenton" lay the broadside of a schooner which had been dashed to pieces on the reef during the night, and which, after making the tour of the reef-locked bight containing the wrecks of the two American men-of-war, had stuck fast on a protuberance of the jagged reef and remained fixed for weeks afterwards. Directly opposite the "Trenton" and "Vandalia" and between them and the beach lay the "Nipsic," boats gone, smoke-pipe gone, rigging broken, lying keeled over to port, a picture of helplessness and disaster.

Far off towards Matafele, with her bows pointing towards the mouth of the Vaisigano River, lay the German warship "Olga," hard and fast on the coral sand bottom, but beyond a few broken ropes and a general appearance of untidiness looking, at this distance, not much the worse for the perilous experiences of the past forty-eight hours.

The beach as far as the eye could reach, both towards Matafele and Matouto, seemed a mass of wreckage, a prominent object directly opposite the American ships being the ornamental bow and figure-head of the lost German man-of-war "Eber." This vessel had been one of the first of the war vessels in port to go on the reef, and had struck the jagged edge, hung for a moment, and then had capsized and gone down with all hands on board. Four or five men and one officer were washed ashore through the surf with life enough remaining to pull through.

As soon as the members of the flag-ship's band could recover their wits and instruments, equally scattered by recent events, the strains of well-remembered airs were once more heard on the morning air, and as the daylight strengthened and the Sunday sun beamed upon the disconsolate crowd gathered upon the deck of the "Trenton," more or less congratulations were exchanged between the survivors, and already plans began to be discussed for the immediate future. In obedience to the admiral's order, I, as acting paymaster of the "Vandalia," prepared to go ashore by the first opportunity to make arrangements for the messing and shelter of our men. The first craft to approach the ship was a native boat manned by the crew of that noble Samoan, Chief Suamanatafa, he being at the steering oar. Into this boat I was speedily lowered, a rope being passed around and under my arms, and so I left the "Trenton," as it proved, for the last time, for I never set foot on

her decks again. As the chief skillfully guided the boat through intricacies of the reef from the stern of the ship we passed quite close to the starboard side of the "Vandalia," and I noted the fact that her poop-deck had been entirely torn loose from the stern of the ship and by a strange irony had floated about until stranded on the topgallant forecastle, the opposite end of the ship. The landing on the beach was effected without incident, there being no surf.

Several of the officers of the "Nipsic" were on the beach, as also pretty nearly all of the population of the town, native and foreign.

Mr. Gurr, an English resident, at once had me taken to one of the large general furnishing stores with which Apia was supplied, and in spite of the day speedily had me in fair business condition,—with a light straw hat, a pair of thin trousers, soft socks, a pair of canvas shoes, and a Chinese sort of blouse.

On the way from the beach oft-repeated native expressions gave evidence of the real commiseration felt by these gentle savages.

The procurement of a comfortable barrack for the crew of survivors was accomplished by noon of that notable day, and a short message in writing to Lieutenant Carlin brought all of the "Vandalia" men ashore the same afternoon, the night being passed in a native church edifice not far from the landing.

Rations in plenty were assured from the stock on hand in various stores and magazines, means for replenishment from Auckland being at once perfected, to be put into operation by the next steamer of the fortnightly service from that port. Of necessity the police regulations were of the strictest order, and a set of orders was speedily formulated by Admiral Kimberly, drawn with especial reference to the novelty of the situation, and which experience proved to be amply sufficient for the maintenance of order during the weary weeks which followed the wreck. The crew of the "Nipsic" returned to their ship when it became evident that the injuries to her hull and bottom were not of so serious a nature as was at first feared, so that the "Trenton's" crew and the survivors from the "Vandalia" were the two bodies of Americans living ashore.

The German survivors we came in contact with but seldom, for the best of feeling did not exist between us, and their head-quarters were more than a mile distant up the shore of the bay and not far from Mununuu point.

Naturally great care was taken to prevent the occurrence of anything like an epidemic, and one of the first things attended to was the quality of the drinking and cooking water. The river called the Vaisigano ran not far from "Camp Vandalia," as our barracks were called, and at first it was hoped that this stream, coming, as it does, directly from the mountain range dividing the island of Upolo in an east and west direction, would be available for these purposes. A few

cases, however, of stomach-trouble among the men gave cause to suspect the water, so search was made for another source of supply. Fortunately this was not hard to find, and a spring of perfectly safe and—for that climate—cool water was discovered, and thereafter a "watering party" was one of the first of the daily items in the routine carried out by the officer of the day.

Bringing water, sweeping the street for some distance each way from the barracks, removing the multitudinous *débris* constantly accumulating and the collection of eatables from the various stores able to supply our requisitions, employed quite a large percentage of the "Vandalia" survivors, and for those not so employed a daily drill and inspection kept every man and officer from idleness, and tended greatly to the contentment and average health enjoyed during the long wait for relief.

Of fruit there was a comparative dearth, the gale having destroyed great numbers of banana plants, and the white man does not take kindly to taro. The alligator pear, so nutritious and toothsome, was not in season, and the medical staff discouraged the use of cocoanut milk.

After the first few days succeeding the wreck the dietary comprised beef both fresh and salt, canned salmon, rice, hardtack, fresh bread, salt fish, canned meats, principally colonial mutton, a frequent ration of fresh pork, beans, tea, coffee, sugar, pickles, and an occasional "blow-out" on "plum duff," that pudding dear to a sailor heart, with plenty of plain sauce.

A German baker living not far from head-quarters had the contract for all the fresh bread required, and it must be said that in the main his efforts to supply a good article were crowned with success. An occasional delegation of hungry and disgusted men would pay a visit to my quarters filled to the brim with some grievance, fancied or real, and if the latter, inquiry and rectification sent them back to their barracks satisfied in spite of themselves, for the average sailor delights in suffering from an unrightable wrong. Usually, however, the "growl" would have for motive the quality, quantity, or appearance of the bread ration. No little diplomacy was required to convey the idea that the market facilities were not of the best, that our straits were desperate, and that "the good time coming" was probably not far distant. The fact that their officers were no better off than they were, in the matter of food, went far to rendering the men more amenable to reason than usual.

While on the topic of food, I must not forget to recall the constant kindness and generosity shown us by our consul, Mr. W. Blacklock, and Captain Hamilton, an American, for many years a resident of Apia. These two seemed to feel that too much could not be done for us. Fruit, cocoanuts, and limes were constantly being supplied by these two

Samaritans in quantities sufficient for the whole crew. To Mr. E. W. Gurr, an Englishman from the colonies, belongs the credit of always having a huge bowl of kava, the native beverage, on tap, and if the drain on the supply caused an empty bowl a fresh supply was always brewed, and it was the general understanding that Gurr's kava was always ready.

Perhaps a few words relative to this peculiar drink may not be amiss at this point. Tava, or "kava," as it is pronounced by the Samoans, is made from the root of a bush of that name belonging to the peppermint family, and is among the few plants cultivated by the natives of these islands.

The native method of preparation is for girls to chew the root into fine bits, and after this process it is soaked in water, being squeezed and mixed by hand until all of the juice or active principle is extracted, when the mass is strained through a thick sponge of native fiber and the completed fluid is ready for use. Nowadays, however, the kava root is frequently beaten up fine or grated on a piece of perforated tin, out of deference, it is supposed, to the wishes of their white friends, the subsequent processes being the same as formerly. The effect of a cup of kava is about as refreshing as that of a cup of hot strong tea, and very much of that nature, except that, unlike tea, it has, at night, a slightly soporific effect. Its taste reminds me of what I imagine would result from a mixture of some clean-tasting soap and a little peppermint,—not at all disagreeable after one or two trials, and always refreshing. The hospitality of the natives always made its first manifestation with an offer of a cup of kava.

Throughout our enforced stay on the island of Upolo not an instance can be recalled of aught but kindness and hospitality from the natives. And the hospitality was not of the servile, cringing sort, but rather as a friendly feeling of one man towards another, for they bore themselves as equals. Fortunately for our health and comfort the climate is the perfection of the tropical type, hot, but not insufferably so, an occasional fierce thunder shower clearing the air for a day or two. During the night the temperature falls rapidly, so that by about three o'clock in the morning a blanket was a necessity for comfort. The winds during our stay seemed to blow from all points of the compass, never blowing strongly from one direction long, and seldom falling to a dead calm. The lightning during the occasional thunder storms, both by night and by day, was something terrific, the flashes being often so vivid and frequent that it seemed as though some damage must be done somewhere not far off. But I have never seen any evidence of injury to buildings or trees.

Surrounded as the Samoan group is by the vast Pacific Ocean, it is not remarkable that dampness was the pervading sensation, and in clear weather the dews are phenomenal. Partly from the salubrity of the

climate and partly from the simplicity of their diet the natives seem to suffer from few diseases, and beyond an occasional light fever, induced by exposure, and some stomach-troubles, brought about mostly by intemperance in eating or drinking, our men continued well and healthy throughout our detention on the island.

The period of waiting after the departure of Lieutenant Wilson for Auckland, New Zealand, in search of a relief steamer to take us to San Francisco seemed never-ending, the routine of duty being supplemented by the hope, daily renewed, that before night the smoke of the coming steamer might darken the spot in the horizon so anxiously watched by hundreds of eyes. Long before the return of Lieutenant Wilson with the welcome relief, the "Monongahela," United States store-ship, called in at Apia, *en route* to the coaling-station at Pango-Pango, and by her we got some mail, and the Australian mail-steamer from San Francisco to the colonies passed by, leaving late papers and letters, whereby we were informed of the effect produced on the world at large by the stirring events of the 16th of March.

Of course our constant association with the natives gave no little insight into their characteristics, and it is a pleasure to remember the many instances of honor, bravery, and manliness exhibited by those savages.

At the time of the wreck we found many wounded warriors ashore being treated in a native church, used as a hospital, they being victims from the battle-fields of the preceding December in the combat between the German forces and those of King Maleatoa. Among the wounded were several women, for it appears that as brave as are the men the women are their equals, for during various battles between the natives and the Germans the wives, mothers, and sisters of the Samoan warriors maintained their places in the fighting rank, feeding the hungry, bringing water to the thirsty, and assisting the wounded to the rear, taking their chances with the braves in the forefront of the fight.

In their silent and patient endurance of pain these natives remind one strongly of the North American Indian, undergoing the most painful operations and treatments without a murmur or sign of distress beyond an occasional grunt. The women and girls, in common with their sex throughout the world, possess a natural aptitude for nursing the sick, and, under the instructions of Surgeon Derr, of the "Nipsic," and two or three missionaries at Apia, the female relatives of those wounded men speedily became adept in dressing the wounds of their warriors, and became of no little assistance to the limited hospital staff.

Wandering about the straggling huts forming the native village of Apia one was constantly saluted with "kalofa," meaning pretty much the same as the Hawaiian "aloha," "good-day," "God bless you," and in general an expression of friendliness and good wishes. Some-

times, and more frequently from acquaintances, this salutation became "kalofa, ali," "ali" being the Samoan equivalent for "sir" or "chief." On parting, the word is "kofá," strongly accented on the last syllable. "Kalofa" is also used as a commiserating or pitying word, when the accent is changed, and it becomes "kalofa," lengthening out the first "a" considerably. Their language is soft and musical and not difficult to acquire. A large proportion of the natives can read and write, and those able to do so are fond of writing poetry, dedicating it to a friend. During our stay at Apia several odes and dedication pieces were composed and written by natives and presented to the various officers with whom the writers were acquainted.

Frequent bathing is a marked characteristic of the Samoan, both male and female, but, contrary to the generally received idea, their bathing is done in fresh water where practicable.

Not far from Apia, a short distance up the Vaisigano, the principal stream of the island, was situated a large and deep pool, bordered with volcanic rocks, and here could always be found a group of natives taking the daily bath. Men, women, and children all plunge in at once without a thought of immodesty or impropriety. As soon as a white man would appear, the native women would set up a wild cry for "sopo," "sopo," meaning soap. The Samoan substitute for this essentially civilized product consists of a thick-skinned orange, the flesh of which was charged with an exceedingly acid juice, which, rubbed on the head and body, was capable, with fresh water, of making a plentiful lather, and seemed to possess the same detergent properties as soap.

Although the native Samoan is provided by nature with an abundant poll of jet black hair, local fashion has decreed that its color must be changed to a seal-brown and sometimes to a dusty brick-red. To effect this a smearing of coral lime, slacked in water, is applied about once a week and allowed to remain over night. By this peculiar custom the color of the Samoan head is quite different from that provided by nature. The lime, of about the consistency of common whitewash, is thoroughly applied to the hair, each particular hair being carefully smeared until the entire head is a mass of white. Unlike the Fijian, the Samoan keeps his hair quite short. Both sexes wear the hair in pretty much the same style, save that the women do not bleach the hair to the same extent as the men.

The men are, as a general thing, tall, well formed, and muscular, and, as evidenced by their aid in transferring the heavy guns of the "Vandalia" and "Trenton" to the beach, they are capable of long and severe labor, and this is the more remarkable when it is considered that their food is mostly vegetable.

The work of removing the guns from the "Trenton" was a very difficult undertaking, but under the constant supervision of Lieutenant-

Commander H. W. Lyon, the executive officer of the ship, the work was accomplished without notable accident, and the guns, after being cleaned and plugged, to prevent moisture from lodging in the rifling, were parked ashore not far from the beach, and, together with the major part of the "Vandalia's" guns, were left for such disposition as the Navy Department chose to make of them. A considerable portion of the paymaster's stores was recovered from the "Trenton," but in a sadly damaged condition, having been for some time under water.

An examination of the "Vandalia" by a diver disclosed the fact that the ship was full of sand to about two feet above the level of the berth-deck, so any attempt at getting out her stores was useless.

During these days of waiting, the work of preparing the "Nipsic" for a voyage to Auckland went steadily forward, a jury rudder having been completed in a short time after the ship got afloat.

Having lost her smoke-pipe during the gale, the "Nipsic" managed to secure a portion of the one belonging to the "Vandalia" through the hard work, perseverance, and skill of the engineer officers of the "Nipsic" and "Trenton."

As the month of April came on the anxiety to get away from the scene of the wreck increased in intensity, and the prospect of that event formed the chief subject of conversation.

No word, however, was received from Lieutenant Wilson, who, as has been said, was in Auckland trying to charter a rescuing steamer, and the danger of some serious epidemic breaking out grew daily more imminent. So when rumors began to circulate that the next Australian steamer would take away as many of the survivors as possible, speculation was rife as to the probable number she would receive.

Finally, on the 30th of March, the steamer appeared in the offing, and in a short time it was understood that the sick and wounded, to the extent of thirty-five persons, were to go at once. Ensign Ripley, Assistant Surgeon Cordeiro, several cadets, and thirty men were transferred to the steamer, lying some three or four miles off shore, in the short space of one hour and a quarter. As she disappeared below the horizon bound for Honolulu and San Francisco, the feeling of homesickness among those left behind assumed almost alarming proportions, but routine duties, the great panacea for such feelings, speedily dispelled the gloom which bade fair to settle over our little community, and by the next day an occasional reference to the good luck of "those fellows" was the only sign that disappointment still rankled in the hearts of a few.

To eke out the steady diet of beef, mutton, and pork, several attempts were made at fishing, but it was speedily found that, although there were plenty of fish in the sea, none could be caught with a hook. The fish here will not bite, and after numerous attempts, all ending in failure, the native method was found to be the only successful one.

The fish which come in from sea to feed on the reef at high water are frequently caught in the crevices with which the coral is seamed, and, standing at the end of the crevice nearest the deep water, two or three natives keep up a furious splashing with poles and paddles, and the fish, being alarmed, flee into the hands or nets of other enemies on the lookout in the shoaler water.

The sea constantly dashing on the sea face of the reef fringing the part of the island abreast of Apia was a never-ending source of admiration, for the long, steady sweep of the Pacific is here brought to a sudden stop, with the result that a tremendous surf beats with steady persistency day after day the whole year through. At night its steady roar was audible, reminding one of a distant waterfall.

The domestic life of the Samoan is of the very simplest type. Nature provides everything required to sustain life, and the clothing worn is of the scantiest possible description. The women do the simple cooking required in the preparation of taro and bread fruit for eating, braid mats, fans, lava-lavas (an apology for the only attempt at clothing worn by the women), make the necessary kava, while the man cares for the children as far as is necessary, and twice a day sees that the family is assembled beneath the hut roof for prayers and hymn singing.

This is true, however, more of Pango-Pango than of Apia, the white man's influence at the latter place being somewhat against the practice of the simpler domestic virtues. By the time the sun is well above the horizon the leading man, or chief, of a hamlet, standing at the entrance of his hut, sings in a loud voice the opening lines of a hymn, and soon from all directions come answering voices, scattered through the forest, until the whole village is awake and the air is vocal with the rich, heavy voices of the men mingling with the higher but sweet notes of the women and children.

The Samoan voice is soft and flexible, and lends itself easily to the simple music taught by the missionaries, and an experience of the sort attempted to be described can never be forgotten. At night, after the sun has left the quick dusk so peculiar to the tropics, a similar worship is carried out, but the morning devotion is the most touching and picturesque. In some households the ubiquitous kerosene lamp illuminates the family at night, but with a great many the old-fashioned method is still pursued of having a shallow hole in the floor at one corner of the hut, where the dried shells of cocoanuts make a bright blaze of considerable duration, without smoke or smell.

On occasions of ceremony or going into battle the Samoan warrior paints his face and body, from the waist up, in the most fantastic manner, in some respects not unlike our Indians, and with beads made of nuts and necklaces of shells and fish-teeth gives one the same impression as the fetichman of Africa.

Of musical instruments the native Samoan is scantily provided, the only thing worthy of the name being the huge hollowed log which, on being beaten with a big mallet or beetle, gives forth a clear, resounding note, which can be heard a long distance.

At the intersection of several of the roads leading into Apia one of these drums was located during our stay, and at nine o'clock each night two of the leading men would belabor it for a few minutes as a signal for all natives to retire for the night from the public highway on pain of arrest and confinement for the night in the native calaboose.

As soon as it was known that Admiral Kimberly was desirous of saving as much of the battery and stores as was possible from the "Trenton," King Mataafa made offer of assistance, to the extent of the whole able-bodied force under his authority, and it was largely through the efforts and working capacity of these stalwart natives that such a large quantity of the "Trenton's" stores were recovered.

On the 13th of April several officers of the "Vandalia," accompanied by Captain Farquhar and Photographer Davis went to Vai le le, some four or five miles from Apia, with a properly-inscribed headboard for the grave of Captain Schoonmaker.

The grave is in a beautiful spot near a lime hedge, in full view of the Pacific Ocean, on a high bluff in the flower-garden of Captain Hoofnagle, superintendent of the German plantation. The photographer got several excellent pictures of the grave, and as the sun went down we all returned to Apia. From this date on the time seemed to pass more rapidly than before, for from one source and another began to arrive rumors that the chartered steamer coming to our relief had been secured by Lieutenant Wilson and would soon be along, and of course even an untraced rumor of that kind put no little life and hope into the hearts of the waiting survivors, but it was not until the 28th of April, on the arrival of the colonial steamer "Lubeck," that any certainty was felt that our rescue was near at hand.

On that day, however, a letter was received from Auckland to the effect that by the last day of the month we might expect the steamer "Rockton," of the Union Company's line, she having been secured, and was to have sailed the day succeeding the departure of the "Lubeck."

So here was nearly the end of our weary exile, and on all sides the eagerness of preparation gave strong evidence of the desire for relief. The next day, April 29, the "Rockton" arrived and came to anchor in the little harbor of Apia at 1.30 P.M., and was at once the centre of all eyes and hopes.

Official word was sent to all officers that the steamer would sail during the forenoon of May 1.

"Day after to-morrow" seemed so close at hand that, after such a period of waiting and watching, it seemed almost too good to be true,

and I have no doubt that many a man rubbed his eyes a second time to make sure that he saw aright. But there she was, and scarcely was the anchor down than she became the centre towards which all boats and canoes converged as though endowed with a special magnetism. All during the day of the 30th and far into the night boatload after boatload of personal effects, curios, stores, provisions, and articles rescued from the "Trenton" were being taken off to the "Rockton," until it seemed that there might be no room left for those whose good fortune it was to sail for San Francisco on the morrow.

In view of the continued unsettled state of affairs in the group and the necessity for some authoritative head of the situation, Admiral Kimberly decided to remain until such time as he felt that his absence would not lead to lawlessness. As a further assurance of peace and safety to the American interests, the efficient marine guard of the flagship, under command of Captain Huntington, and a few sailors were directed to bear the admiral company, his personal staff being of course included in those who would assist him in carrying on the government until a man-of-war should reach Apia from the coast. Leave-taking occupied pretty nearly all of the scant hours remaining of Samoan exile, and as the sun went down on the 30th of April we all realized that the last act in the drama of the wreck was about to be played.

But few of the officers slept on the "Rockton" that night, but bright and early on the morning of May 1 Apia was astir, and by nine o'clock everything was ready for a start, and the bay was covered with the native canoes, whose owners came alongside in full force to say kalófa to the Amelikas. At 10.30 A.M. the anchor was weighed, and as the ship slowly moved towards the open sea the band of the "Trenton" played everything known, while the "squilgee" band of the English man-of-war "Rapid" played "Auld Lang Syne," "The Girl I Left Behind Me," and various other airs appropriate to the occasion, while the sailors on the "Nipsic" gave us three cheers, and the crowds of natives on the beach and afloat waved lava-lavas and shouted until they must have been hoarse.

Notwithstanding the excitement of the day, the ship's company speedily settled down to the ordinary routine, and the long voyage to San Francisco began with smiling skies, smooth sea, and pleasant anticipations. In spite of the natural pleasure at the ending of the long and wearisome imprisonment of forty-four days succeeding the wreck, a certain feeling of sadness pervaded us all, I think, for nearly every one left behind some friend whose "kalófa" would never again sound in our ears, and the dreariness of the life in Apia had been greatly relieved by the constant and daily kindness and hospitality bestowed by the noble savages fast disappearing below the horizon.

The date of our departure was Wednesday, May 1. Inasmuch, however, as that was by Australian time, the next day was also Wed-

nesday, May 1, which brought us once more into touch with our part of the world. The voyage was totally uneventful, the part of the ocean over which the course lay being unfrequented by either sailing craft or steamers, and a great part of the way seemed a veritable ocean desert, devoid of fish or birds.

The average speed was about nine knots an hour, and about midnight of May 4 the ship crossed the equator and we imagined the gentle breeze felt cooler. During the evening of May 8 the north star became visible for the first time above the horizon.

The few sick with which we sailed from Apia began to improve at once, and with the exception of two or three very sick men the crews of the two ships were kept in fair health. As the month slowly wore away it became evident that about the 20th would see the ship in San Francisco.

A continuance of fine weather enabled the "Rockton" to do her best, and on the morning of May 20, in a thick, dripping fog, the vessel steamed through the Golden Gate, and, as the sun dissipated the mist, the smoke and chimneys of San Francisco came into view, with Alcatraz Island and the brown hills of Saucilito on the other hand.

Without any considerable delay the "Rockton" was headed for Mare Island, where our coming was anticipated by every man, woman, and child in the navy-yard. Cheers and tears greeted the incoming steamer as she came to abreast of the navy-yard, and by two o'clock in the afternoon the shipwrecked crews and officers of the "Trenton" and "Vandalia" were safely ashore recounting their adventures to sympathetic ears and filled with thankfulness that the wreck and its sequences were things to be talked about as of the past.

HARRIE WEBSTER,
Chief Engineer United States Navy.

A STUDY OF MILITARY DESERTION.

In the broad sense of the term desertion is practiced in all trades and professions. Without the consent of his employer or partner the unreliable and deceitful man wilfully or cowardly deserts his post of duty or companion, no matter what ruin and misfortune may follow such a course. This trait of character is a part of the evil side of man, and he may possess it as an inheritance or acquire it through vicious associations.

If such a pernicious tendency to unreliability appears in youth, the most rigid discipline may fail to effect a cure. The army should not be called upon to maintain and operate a reform school for the wicked elements of society. The making of a thorough soldier is a difficult and expensive operation at best. The recruit must have a wholesome mind as well as a healthy body. Vicious habits warp the mind and encourage dishonorable practices; a weak mind is subject to fits of discontent; and a disordered body furnishes a hotbed for the growth and perfection of both real and imaginary evils. What is bred in the bone and blood cannot always be eradicated, although it may be suppressed, only, however, to smoulder and remain latent until the opportunity for the flame of discontent to burst forth in a paroxysm of rage and violence, or by further concealment to effect the accomplishment in darkness of a dishonorable and criminal deed.

Civil contracts are broken every day, unfairly, dishonestly, and with an exhibition of the most deliberate and premeditated meanness.

The dockets of our civil courts throughout the country are crowded with evidence of such want of integrity, lack of principle, and the practice of deception. Punishment is practically limited to fines and a legal hold upon the property of the convicted to satisfy the demands of law and justice. This procedure is very effective in most cases, for it is a most painful experience to the large majority of people to find their means of comfortable existence swept away by the strong arm of the law.

The frightful punishments of the Middle Ages have been superseded by a more humane consideration of the weaknesses of mankind. The shocking practices of those times did not prevent crime. The awful barbarity of the punishment did not deter the hardened criminal

from risking death by slow torture to carry out his foul purpose of murder and ruin. The shocking penalties for crime inflicted to-day in the Chinese empire do not appear to lessen its perpetration in that wonderful country whose civilization antedates the Christian era.

The civilized world has shuddered in dismay at the violence exhibited by Russian officials in attempts to paralyze and destroy the forces and followers of anarchism and nihilism. It is sometimes customary to characterize Russia as "absolutism tempered by occasional assassination," but here, as is often the case, truth has been sacrificed to epigrammatic fiction. Every nation in Europe and Asia is to-day contending against this terrible source of sedition, conspiracy, and destruction, no matter what the form of government, or how liberal its construction of the laws of the country in the interest of the people. Outrageous oppression has existed in the past, of that there is no doubt. It even exists to-day in some quarters. But sudden freedom from all restraint makes the ignorant and vicious the incarnation of Satan in practicing the worst forms of human vice.

Alexander II. of Russia struck the shackles from twenty millions of serfs, in spite of which, however, his assassination followed after eight attempts upon his life.

"An eye for an eye and a tooth for a tooth" must be the outcome of such brutal violence.

Crime must follow oppression, and oppression crime, until both are subdued and destroyed, and a new order of things, generally upon a higher plane of civilization, springs forth from the ashes of sedition and murder.

So far, I have certainly drawn a picture from the morbid side of mankind; and to illustrate what? Why, the source from whence is drawn, in part, that powerful factor in human affairs,—*public opinion, public sentiment.* If conceived in riotous living, it brings forth an offspring destined to lead the cohorts of anarchism and desolation. If inaugurated in wisdom and benevolence, it establishes and maintains a liberal and righteous government.

The destinies of nations have been in the past, but not more than in the present, in the keeping and under the control of their military and naval forces. Arbitration has its place in the economy of mankind, but this means of settling international disputes can never take the place of force of arms when necessities arise for their employment.

Public opinion demands that every nation shall be in readiness for any emergency that may come. Full of whims and uncertainties, she often baffles the most astute politicians and upsets the calculations of the wisest statesmen. Woe be to the man, however great, to the political party, however omnipotent, that fails in the hour of need to interpret aright the necessities of the people and plan for their successful fulfillment. The sword and the pen are indispensable to each other in

this great contest of life. Public opinion has immortalized the men who have won her approval, and covered with everlasting shame those who have failed and fallen by the wayside. This terrible power for good or evil is latent and smouldering in every nation, but ever watchful of the first opportunity for manifestation, and then leaps from its den of seclusion with hardly a moment's warning, and haughtily demands life, property, wealth, wife, and children; everything that man holds dear on this earth.

Have I said that the destiny of a nation rests in the strength and patriotism of its military and naval forces? Yes, but not I; this is the edict of public sentiment.

We are spoken of sometimes as the most enlightened and prosperous nation on earth, and in the same breath is added the remark that we have the smallest standing army and the least strength in naval force of any nation, considering our geographical area and commercial importance. Our own people boast of these assertions and dwell in beautiful rhythmic language on the security of our insular position.

In spite of these opinions, our history demonstrates that we were conceived in the throes of a mighty revolution and fought to a successful issue against the greatest military and naval power of Europe. Our youth has been passed under the influence of Indian wars, without a parallel for fierceness and extent, and through the awful experience of a rebellion, which in many respects was, and still continues to be, unequaled in the history of the world.

Nothing is truer than that our record of material progress as a nation is our military history. The truth of this cannot be denied and is an insuperable argument for the maintenance of our standing army, the strength of our navy, and the development of both to the highest state of efficiency. That thus, through their beneficent influence, in making stronger and more patient, through all the trials and tribulations of a nation's checkered life, the power of resistance to evil and danger, we may reach that pinnacle of prosperity and greatness which shall make us worthy to lead the nations of the world. And such is the reward of self-denial, patience, discipline, honorable service, unswerving honesty and patriotism. They are the concomitants of true military and naval supremacy, of friendly co-operation with the people in maintaining the national government, thus assuring that peace and stability which secures a just administration in all things, and the fullest degree of a nation's prosperity.

Desertion as a military offense has no counterpart in civil institutions, and yet it is one of the most heinous infractions of military discipline, and so recognized by the Acts of Congress and by the decrees of all nations, from the savage to the most enlightened.

It saps the strength of an army as no other offense and is a constant source of demoralization. It strikes at the very foundation of

military organization and results in a very costly expenditure of time, labor, and money. It is a vital drain upon the strength of a military establishment which no army can successfully withstand.

I fancy that I hear the complacent, overconfident, prosperous American say, "We carried on the war of the Rebellion to a righteous and successful issue without long and expensive preparation in the development of a standing army. Of what great concern is the loss from our little army in time of peace of a few thousand men, breaking a contract because tired of a bad bargain?" Yes, success did come at last, in that terrible conflict, but at what price? The mobilization (combined forces) of about three million five hundred thousand men, an expenditure of $6,500,000,000, and the loss from death in battle, wounds, and disease, of about five hundred thousand men.

The armies were depleted by a drain upon their resources, through desertion, of three hundred and nine thousand five hundred and thirty-three men, at an expense for bounties, equipment and instruction of over $300,000,000, or about four and a half per cent. of the entire cost of the war. Our situation in peace compared with these figures exhibits the fact that the cost of desertion is about four and a half per cent. of the entire appropriation for the support of the army. Can it be possible that in time of peace our little army is suffering a loss fully the equivalent of that attending our great armies during their operations in one of the greatest wars in the history of the world?

Moreover, can it be possible that our average loss of men from desertion during the past twenty years of peace is about five per cent. greater than the enormous losses during the war of the Rebellion?

Is it any wonder, then, that some of our most distinguished officers have prepared special reports and elaborate essays on this subject? I refer especially to General Holabird of the Quartermaster's Department; General Abbot of the Engineers; Generals Drum, Kelton, and Colonel Vincent of the Adjutant-General's Office; General Swaim and Colonel Lieber of the Judge-Advocate-General's Office; Generals Sackett and Breckenridge of the Inspector-General's Office; Colonel Woodhull of the Medical Department; Generals McDowell, Miles, and Stanley; Colonel Richard L. Dodge of the Infantry, and Captain Pope, Commandant of the Leavenworth Military Prison; together with a number of younger officers from all three branches of the service.

The Hon. Geo. W. McCrary, Secretary of War in 1878, wrote as follows: "A small army, such as ours, manifestly needs all that strict discipline can do to supply, by the greatest efficiency, whatever may be lacking in numerical strength. Desertion strikes at the very root of military strength and discipline. It not only takes away from the ranks the numbers of those who abscond, but it tends to greatly demoralize those who remain, especially when they see crime attended by impunity.

"Desertion must be punished, and with a severity that is not only just, but swift and certain. There may be cases where the circumstances are such as to appeal to compassion in behalf of men who have long been deserters, perhaps under conditions of extenuation, and, having become useful citizens and heads of growing families, live in constant and painful dread of the consequences of their crime. For such, as for all similar cases, whether military or civil, the pardoning power of the Chief Executive is designed to afford all proper relief."

So far as I can ascertain, our Secretaries of War from the organization of the department to the present day have, with one accord, condemned and deplored the crime in the strongest terms. This fact is important when we consider the civilian character of this member of the President's Cabinet. It illustrates a prominent trait in American patriotism, and shows that service in support of the honor of the country, and in the protection of the lives and property of the people is of the highest character, and demands unquestioning obedience and devotion.

The army ought to have the influence of a great many such statesmen who will leaven the lump of public sentiment in the direction of a more thorough appreciation of the army's position relative to the immediate and prospective welfare of the whole country. The mass of the people must recognize the honorable and high calling of the profession of arms as embodied in our regular military establishment and supplemented by the National Guard.

The accomplishment of this great desideratum will go far towards popularizing the service in the rank and file, making its many advantages more thoroughly appreciated, and more eagerly sought by young men of good habits, excellent character, and fair education. "You can lead a horse to water but you cannot force him to drink" is a trite and very significant saying, which leads us to the observation that we can mould public opinion by fair and reasonable methods, and in the work thus to be accomplished both officers and men are very potent factors. In a very large degree the army is and must be what its members make it. To this end there is an individual responsibility resting with no light force upon the shoulders, first, of every officer; second, of every non-commissioned officer; and, lastly, of every private.

In critical cases especially the army must work out its own salvation, and under such circumstances the line should be equally potent with the general staff in the development of practical plans, and in the means of successful execution. The line is in close communion with all the factors involved, and has many of the important incidents under careful personal observation. The staff is more distant from the scene of action, and its members are prevented from observing the actual occurrences and surrounding conditions. They must, therefore, rely

upon the special reports of inspectors, which should be supplemented by the original and exhaustive investigation of company commanders.

In truth, this question of desertion is, after all, a statistical one, especially as to an analytical and thorough study of the causes underlying the offense, and as to the remedies which must be applied for its correction. The necessary work is not to be accomplished in a few months, or even a year. The subject is complicated with the idiosyncrasies of human nature, multiplied by race peculiarities, and aggravated by the caprices of public sentiment. Revealed in individual cases, it becomes necessary to collect, classify, and analyze the information gathered. Approved methods of analysis must be followed, and relations must be verified, not assumed.

In all of the discussions I have been able to find on the subject of desertion throughout the annual reports of the Secretary of War for the past twenty-one years, the files of the *Journal of the Military Service Institution* for the past thirteen years, the files of the UNITED SERVICE MAGAZINE for broken periods of over six years, histories of the war of the Revolution, of the war of 1812–14, of the war with Mexico, and of the war of the Rebellion, I fail to find an exhaustive examination or investigation of desertion.

Records there must be which will furnish consecutive and comparable data, but they have probably never been brought together, discussed, and published. In many of the reports on desertion the writers acknowledge the want of statistics.

The only approach to a complete examination that has come to my attention appears in the Annual Report of the Adjutant-General of the Army for 1889. Generally speaking, the statistics presented cover the year ended June 30, 1889, but there are several tables prepared for the decade terminating at that time. The data furnished are very interesting and valuable, but are probably not considered conclusive, even within the small limits of the investigation undertaken.

A decade is hardly sufficient, even for a small number of factors, in seeking the solution of such a complex problem as desertion. The period is very short, considering the varying conditions to which the army has been subjected and the extent of its service. The existence of our military establishment is marked by a century. Can we take less than a quarter of that time to form the basis of an exhaustive investigation respecting the vital existence of that organization? But two and a half decades are not as satisfactory as four or five. A period of forty years prior to January 1, 1894, would embrace a remarkable era in the history of this country, and one especially full of interest and value from a military stand-point. A period of fifty years would embrace an epoch which would permit of a consideration of the peculiar influences upon the army resulting from the discovery of gold in California.

Within such a range of time a multitude of the most critical influences at work upon the military establishment could be considered, and conclusions based upon such investigation, if thorough and comprehensive, ought to be of great value in formulating the best methods for the maintenance of the enlisted strength of the army. In conducting such an investigation it would not be wise to restrict research to the records of our own country. The experiences of Europe and of the world are open to us, and representatives of the leading nations are to be found in our army. History repeats itself in military organizations as in civil institutions. To escape the faults of those who precede us we must know the sources of their shortcomings.

Facts, clear, concise, and accurately grouped and classified, we must have. Their origin must be absolutely identified, and conclusions must be drawn and exhibited in the presence of those facts.

While the absolute value of reliable statistics is of the highest order, especially in the hands of an expert, yet they must be used with extreme caution by the novice in formulating rules for practical application. Their arbitrary employment with the idea that dry figures can be handled with elasticity and made to serve a purpose for which their values were not computed, is a rash proceeding, and must end in failure.

The mean temperature of any particular day of the year, even though compiled from the records of a long series of years, cannot safely be taken as the measure of human endurance on the same date in a succeeding year, for the average is not the proper factor to be employed, without considering the extremes.

Perhaps the first military application of this average method, so unctious to the minds of many quasi-scientists, was made by the great Napoleon, who directed La Place, the celebrated French mathematician, to calculate when the cold of winter would set in severely over Russia. The latter found, from such records as he could obtain, that, on the average, it did not occur until January. The emperor made his plans accordingly; a sharp spell of cold and of violent storms set in in December, and the suffering and destruction of that glorious army, without the firing of a shot, exceeded their bloodiest engagements on the field of battle, and is, perhaps, without parallel in the history of the world.

Another case somewhat similar, but of more recent occurrence, was the great flood at Johnstown, Pennsylvania, in May, 1889. The dam at South Fork was built on the basis of a certain average rainfall for that section of the State. The values were roughly approximated, although calculated from a long series of years, but extremes were ignored, and especially the rate of fall per hour.

The storm continued with extreme energy for thirty-six hours, the dam gave way, with a frontal depth of about ninety feet of water,

and five thousand souls were hurled into eternity amid the roar of that matchless torrent, the grinding of timbers, and the frantic struggles of human beings and animals.

In our military organization we have struggled with the crime of desertion for years. Theory has been piled upon theory until that mountain of ideals and fancied conceptions of exact solutions has toppled over again and again. The assigned causes of desertion appear to be as numerous as the men who commit the crime. The real causes, however, can probably be brought within a very small compass.

The difficulty seems to lie in the want of an exhaustive collection of all the facts, followed by a thorough and impartial study of them. It is not to be denied that the necessary statistics are rather difficult to obtain. The information is necessarily technical and official, and consequently most writers have resorted to information obtained from observation, personal experience, and discussion. It would seem that the failure to successfully solve the still unsolved problem of desertion exists in the fact that the position has not been thoroughly reconnoitered, and the information available has not been charted,—that is, all of the data connected with the problem have not been exhibited in a manner to permit of complete observation and thorough comparative study.

The situation of the enlisted man in the American army is certainly one that has received most earnest and able consideration by both the line and the staff. All efforts have been directed towards bettering and elevating his condition,—physically, mentally, and morally.

Colonel Richard I. Dodge, U. S. A., retired, wrote, in 1887, as follows on the subject of desertion: "Is there any business in life in which a reasonably sensible man could be expected to bind himself to remain in the most subordinate position for five years,—a business of which he is entirely ignorant, and in which he is to yield his liberty and will to the absolute control of superiors, of whose temper and disposition he knows nothing? And when he is told that this surrender of self must be so absolute and binding that a violation of his contract will lead to his arrest and imprisonment for one of the most dishonorable of military crimes, the only wonder is that any man dares to enlist. The fault and cause of complaint is the absolute inflexibility of our present system. It is not a matter of marvel that desertion is common. To the soldier, tired out and disgusted with the service, desertion offers the one sole means of escape."

I am of the opinion that this picture is considerably overdrawn. In the first place, few enlisted men remain in the most subordinate position for five years. The rank, increased pay, and the privileges and opportunities of non-commissioned officers are open to the most deserving. While promotion and increased pay cannot at once be given to all of the excellent men in a company, yet some may obtain extra-

duty pay, and others, while waiting for advancement, enjoy the highest regard of their officers. There is a compensation in the knowledge of well doing and the fact that it is appreciated by those in authority.

All men cannot be rich and influential, but all men can perform their duty wherever they find it; and in the nature of things so large a proportion of them fail in this respect that there is a constant demand for intelligent, capable, and reliable men in all the professions and industries, and these men eventually go to the top, because they are ready to meet the requirements and emergencies of the world.

Success does not come easily in any direction nowadays. It requires years of experience and a very faithful discharge of duty to accomplish the making of a good soldier.

The position of first sergeant of a company is one of the most difficult in the army to fill satisfactorily, and yet the rank and pay are not large, and certainly the latter is inadequate. But similar difficulties are encountered in civil life. Advancement is slow and salaries are small considering the cost of living and the responsibilities of the position occupied. This hard and narrow path to honor and affluence does not, however, justify discontent, violence, and crime.

Every profession and industry struggles with incompetency and crime. There is no sympathy for the wayward and inefficient. The "cold shoulder" of the world is a hard place to rest the head for consideration and succor. To the unsuccessful civilian, "tired out and disgusted" with the heartlessness of the world, "desertion offers" *no* "means of escape." He cannot get away from the ill luck and cruel fate that follows and overshadows him. The soldier can desert and fail at another occupation. The civilian can commit suicide and end the struggle of life. Both men are cowards, and both are unfit for success in any direction without moral and physical rehabilitation under the most rigid discipline. From the pen of another well-known officer we get a more wholesome glimpse of the enlisted force of the army.

In the "Armies of To-Day" (1893), General Wesley Merritt makes the following significant remarks concerning the army and the enlisted man: "A term of service judiciously spent in the army is an advantage to a young man, second only to a university course. It improves him physically, broadens his mental view, and fits him to compete in life with the educated and enterprising. Some of the most successful men in the Western country are among those who have served a term of enlistment in the army. They are proud of their service and grateful for the advantages it has brought them. No young man not having superior advantages need now hesitate to adopt the army as an experience which will increase his opportunities for success in any profession."

The Act of April 11, 1890, regarding the statute of limitations as to desertion in time of peace; the Act of Congress, entitled "an Act

to prevent desertions and for other purposes," approved June 16, 1890; the Act approved September 27, 1890, regarding the limits of punishments to be inflicted by military tribunals; the Act of October 1, 1890, to promote the administration of justice in the army in time of peace; the Act of July 27, 1892, to further promote the administration of justice in the army in time of peace; the Act of Congress approved February 27, 1893, regarding re-enlistments; General Orders No. 77, Adjutant-General's Office, of 1889; General Orders Nos. 45, 58, 68, 80, 81, and 145, Adjutant-General's Office, of 1890; General Orders Nos. 87 and 96, Adjutant-General's Office, of 1891; General Orders Nos. 22 and 32, Adjutant-General's Office, of 1892; and General Orders Nos. 11 and 22, Adjutant-General's Office, of 1893; all of the above, and probably other official evidences of wisdom and justice in the interest of the enlisted man, have occupied the attention of the War Department and Congress for the past five years.

But desertion still continues, and the record of 1893 is over three hundred above that of 1892. Moreover, the record of 1893 is slightly in excess of that of 1878, a period fifteen years back, when the condition of the enlisted man was certainly inferior, in many respects, to his present surroundings and opportunities.

The record of desertions in 1893 (1682) was only one hundred and sixty-two less than that of 1876 (1844), and the latter exhibited a much greater reduction from the almost unparalleled maximum in time of peace, of 7271 desertions in 1873, than has been secured in 1892 (1382) from a maximum of 3741 desertions in 1882.

The average yearly number of desertions for the twenty-one years from 1873 to 1893, inclusive, has been 2745. The years falling below two thousand are as follows: 1876, 1844 desertions; 1878, 1678; 1879, 1965; 1891, 1503; 1892, 1382; 1893, 1682. The years falling below the average, but remaining above two thousand are,—1875, 1877, 1880, 1881, 1886, 1887, 1888, and 1890. The years rising above the average are as follows: 1873, 7271 desertions; 1874, 4606; 1882, 3741; 1883, 3578; 1884, 3672; 1885, 2927; 1889, 2835.

The average yearly enlisted strength of the army from 1873 to 1893 (twenty-one years) has been 23,927 men, the average number of privates being 17,192.

The average enlisted strength of the *line of the army* from 1878 to 1893 (sixteen years) has been 20,160 men, the average number of privates being 15,041. The average number of desertions from 1873 to 1893 (twenty-one years) has been 2745 from all branches of the service. Considering the enlisted strength of the army in privates only, as above given (for it is assumed that very few non-commissioned officers desert, and the number may be neglected in this computation), the average percentage of desertion for the sixteen years, 1878 to 1893, inclusive, has been 14.48. It has been customary to express this per-

centage in terms of the whole enlisted strength of the army, and the result has been too low a value,—in other words, the evil was not correctly measured numerically. When so considered, the percentage is reduced to 9.8.

Expressed in terms of the strength in privates, the highest percentages occurred as follows: 1882, 22.2 per cent.; 1883, 21.5 per cent.; 1884, 21.3 per cent.; 1887, 20.3 per cent.; 1885, 17 per cent.; 1889, 16.5 per cent. The extraordinary number of desertions in 1873 gave 42.8 per cent., and in 1874, 27.1 per cent.

The average number of enlistments during the sixteen years from 1878 to 1893 has been 6819 men; the maximum, 8775, being enlisted in 1884, and the minimum, 5006, enlisted in 1880. The total enlistments reached 8133 in 1889, 7950 in 1892, and 7931 in 1893.

Expressed in terms of total enlistments, the yearly average of desertions for the sixteen years, 1878 to 1893, has been 35.3 per cent. The maximum, 48.4 per cent., was reached in 1882 and the minimum, 17.4 per cent., occurred in 1892.

From 1880 to 1885, inclusive, the average percentage was 43.15. In 1886 it was 39.2; in 1890, 39.6; in 1878, 27.8; and in 1893, 21.7 per cent.

The average yearly number of applications for enlistment during the fourteen years from 1880 to 1893, inclusive, were 26,106, and the average percentage of rejection, 73.4.

The maximum number of applications, 30,134, were made in 1884, and the minimum, 21,698, in 1887. In 1882, 28,884 applications were made, and in 1892, 29,078, falling to 26,738 in 1893.

The highest percentage of rejection, 78, was made in 1880, and the lowest, 71, in 1884, and in 1893, 71.1 per cent. In 1881 the percentage was 77; in 1886, 77.1; 1891, 74.3; 1892, 72.2.

The average yearly total loss of enlisted strength from death, discharge, and desertion during the sixteen years from 1878 to 1893 has been 9462 men. The maximum loss, 10,868 men, occurred in 1892, and the minimum, 5758, in 1878. In the following years the loss exceeded nine thousand: in 1881, 9173 men; 1882, 10,145; 1883, 9749; 1884, 9972; 1889, 9086; 1891, 10,604, and in 1893, 9454. The loss continued to increase after 1878 and remained above 8000, except in 1880, when it was 7582, and in 1887, 7820.

Expressed in terms of the total loss of enlisted strength, the yearly average due to desertion has been 27.52 per cent. The maximum percentage 36.8 was reached in 1883 and 1884, and was 36.7 in 1882. The minimum, 12.7 per cent., was reached in 1892, but rose again to 17.8 in 1893.

The average yearly number of trials by inferior courts for the fifteen years from 1878 to 1892 has been 10,360. The maximum, 16,670, occurred in 1892, and the minimum, 8233, occurred in 1880.

The most decided increase was from 1890 to 1891. The former year had 11,574 trials and the latter 15,140.

The influence of the establishment of the Summary Court appears to be evident here, and yet the number of trials by General Courts shows a steady increase from 1890.

The average yearly number of General Court trials for the fifteen years from 1878 to 1892 has been 1861. The maximum, 2328, occurred in 1885 and the minimum, 1563, in 1878. There were 2280 trials in 1884 and 2000 in 1892, the latter being the highest since 1885.

In the record of trials by Inferior Courts the actual number of different men tried also shows a decided increase after 1890. The yearly average for seven years from 1886 to 1892 has been 7394, the maximum, 9603, occurring in 1892, and the minimum, 4579, in 1888.

The average yearly number of convictions of desertion by General Courts for the sixteen years from 1877 to 1892 has been 353. The maximum, 700, occurred in 1884 and the minimum, 318, occurred in 1887. There were 3672 desertions in 1884 and 2240 in 1887. In 1885 with 2927 desertions there were 674 convictions. In 1892 with 1382 desertions there were 426 convictions, being the same as in 1886 with 2090 desertions. In 1889 with 2835 desertions there were 443 convictions. The effect of increased reward for apprehension has not been very pronounced.

The average yearly number of native recruits for the army, for the fourteen years from 1880 to 1893, has been 4665, while those of foreign birth number 2587. The maximum number of native birth, 6652, were accepted in 1892, and the minimum, 3306, in 1886. The maximum number of foreign birth, 3543, were accepted in 1884, and the minimum, 1565, in 1880. There were 3237 accepted in 1889, 3195 in 1892, and 3097 in 1883. Unfortunately the correct values are not available to show the proportion of desertions among native and foreign-born soldiers.

The proportion of foreign-born recruits has remained steadily at about thirty per cent. during the fourteen years from 1880 to 1893.

These statistics (considering all that have been presented) are especially interesting in that they show strange and remarkable fluctuations. The period of investigation is too short from which to form accurate normal values for the various elements considered. It would be interesting and valuable to discuss the abnormal departures existing in many cases, but the limits of this paper prohibit the undertaking, as also the presentation of tabulated statistics.

During 1891 and 1892 there was a notable decrease in the number of desertions, but in 1893 there was an increase of about three hundred over the previous year; and, moreover, the strange fact appeared that the record of 1893 (1682) was slightly greater than that of 1878 (1678).

This latter year is part of a five-year period of notable decrease in desertions, beginning in 1875 and ending in 1879. After this a decided increase began and fluctuated between two and nearly four thousand annually until 1891.

We are now passing through another period of decrease, but not so marked and energetic as the former. Taking the percentage of desertion as expressed in privates of the enlisted strength of the army, the decrease in the first period was 33.02 per cent. from a maximum 42.72 in 1873 to a minimum of 9.7 per cent. in 1878. In the second period the decrease is only 14.20 per cent. from a maximum 22.2 in 1882 to a minimum of 8 per cent. in 1892. This decrease would be only 9 per cent. if a second period of excess from 1881 to 1885, inclusive, should be excluded from the computation. The annual average of this period was 3256 desertions.

These abnormal departures of deficiency appear to arise from decided changes in administration, the influence of which gradually disappears as the novel and sudden effect wears off. There would appear to be a waver of expectancy among the deserting class, and then as the effect of the new measures were fully understood and consequent changes effected a relapse would follow, terminating with a full sway of the old evil.

What is the true situation? The soil is finely cultivated and the best of seed is sown, yet the harvest is wanting. The soil is barren, and will not respond to the most thorough tillage.

The worthless soldier must be born again, but the expense of the transformation it is impracticable to assume. There must be a change in the kind of material recruited. The surroundings and privileges of the soldier of to-day are greatly in advance of those prevailing ten to fifteen years ago.

There is now no legitimate excuse for the crime of desertion, and yet the spirit of this statement is not to be taken as condoning any past offense of this character. An old first sergeant of one of the companies of the Ninth U. S. Infantry said, in reply to the question, What is most needed by the enlisted man of to-day? "provide for his retirement after twenty or twenty-five years' service and then let him alone."

Another, in speaking of that class of men who desert, said, "They care nothing for improvements and advantages. They are naturally bad, both in and out of the army." Another sergeant referred to the "natural restiveness of the American-born recruit, his chafing under discipline, tendency to discontent, and want of aptitude to make the best of his surroundings."

JOHN P. FINLEY,
First Lieutenant Ninth Infantry.

(To be continued.)

ORIGIN AND DEVELOPMENTS OF STEAM NAVIGATION.

(Continued from page 274.)

1839.—THE "PRESIDENT."—The "President" was launched December 7, 1839, with great *éclat*, and sailed on her first trip to New York August 1, 1840; but her career was very brief, and may be summed up in a few words. When due from New York in April, 1841, she failed to make her appearance: tremendous weather having been experienced in the Atlantic, with unusual quantities of ice in very low latitudes, and the greatest anxiety was felt for her safety. She was never again heard of, nor was any trace of her wreck ever discovered. Her figure-head was a bust of Washington after Canova.[1]

1839.—THE "BRITISH QUEEN."—The "British Queen" sailed from Portsmouth, England, on her first trip, July 13, 1839, with a full complement of passengers, a crew of one hundred men, eight hundred tons of goods, and six hundred tons of coal. She cost three hundred thousand dollars, and when leaving the harbor was said to have afloat in her property to the value of seven and a half millions of dollars. She was sold to the Belgian government in 1841.

The "Columbia," of the Cunard Line from Liverpool to New York, was wrecked on the rocks off Seal Island July 2, 1843. No lives lost.

In 1840 Lieutenant Wall, royal navy, communicated interesting papers to the *United Service Journal* "On the Construction, Proportions, and Power best adapted to Sea-going Steam Vessels," in which he presented arguments in favor of building and supplying large steamers with three instead of two engines, and set forth the advantages which would counterbalance the increased expense, weight, and friction of a third cylinder.

[1] On the 23d of April, 1841, in lat. 41, long. 70, a Portuguese brig saw a large steamship under sail going about four miles an hour. No smoke issued from the funnels (the "President" had two), and the paddle-wheels were not in motion. The captain of the brig saw the steamer on the following day, and even approached within three or four miles of her while pursuing his homeward route. She did not hail the brig, nor did she appear to be at all in a disabled state. A British man-of-war and two Portuguese vessels were sent to cruise in search of the "President," but without success.

The same year M. Scott Russell arrived at this "very remarkable result:" "That in a voyage by a steam-vessel in the open sea, exposed of course to adverse winds, there is a certain high velocity and high portion of power which may be accomplished with less expenditure of fuel and of room than at a lower speed with less power."

The Secretary of the United States navy, in 1840, in his official report, stated that England, in 1836, had six hundred steamers at home and abroad, and in 1840 the number of steamers in the United States was eight hundred, of which six hundred belonged to the Western waters, where in 1834 there were about two hundred and fifty-four. About one hundred and forty belonged to the State of New York. In tonnage, in 1840, the United States had one hundred and fifty-five thousand tons of steam-shipping, and Great Britain sixty-eight thousand.

The Society of Arts awarded Mr. Jennings a silver medal in 1840, for his invention of night signals for steamers. A small iron steamer was built in England, appropriately named "The Anthracite," especially adapted to burning that kind of coal.[2]

July 10, 1840, the "Cyclops" steam frigate, "the largest and most powerful steam man-of-war in the world," was launched at the Pembroke Dock-Yard. Her dimensions were: length, 225 feet; beam between paddles, 38 feet; depth of hold, 38 feet; tonnage, 1300. She was two hundred tons larger than the "Gorgon," launched from the same slip two years before. She had a complete gun-deck, as well as an upper or quarter-deck, and on her main deck mounted eighteen long 36-pounders, on the upper deck four 48-pounders and two 96-pounders, "tremendous guns on swivel carriages, carrying a ball ten inches in diameter, and sweeping around the horizon two hundred and forty degrees."

She was commanded by a post-captain, the "Gorgon" being the only steamer in the royal navy at that date taking post rank. Her crew consisted of two hundred and ten men, twenty engineers and stokers, and a lieutenant's party of marines, *who had charge of the guns.* All the guns were mounted upon sliding fixed pivot carriages. She was schooner-rigged, and with six months' stores and twenty days' fuel, drew only fifteen feet of water. Her orlop-deck could store eight hundred troops and their officers with comfort. She was built in six months, on plans of Sir William Symonds, and had engines of three hundred and twenty horse-power.

The steamer "Nicholai," of eight hundred tons, was built at Deptford in 1839, to run between Lubeck and St. Petersburg, and the Messrs. Laid & Woodside, of Liverpool, shipped in sections the hulls of three iron steamboats to be set up in Montevideo.

1838.—THE "COLUMBUS."—The "Columbus," of Liverpool,

[2] Mechanics' Magazine.

built in 1838 for transatlantic voyages, was fitted with Howard's *vapor* engine, and hence obtained the name of the "*quicksilver*" steamer. She was brig-rigged, had two very low funnels, and burned *anthracite* coal, so that "no smoke was emitted." She was a vessel of 330 tons, builder's measurement, had 21½ feet beam, was 145 feet long on her keel, and her depth of hold was 13½ feet; horse-power, 110. She had two 55 feet engines (her cylinder being 40½ inches in diameter), her piston had 3½ feet stroke, and her paddle-wheels were 17½ feet in diameter. Her speed was ten and a half statute miles per hour. Her furnace was not applied immediately to the water, but to a pan of quicksilver, which it was proposed to maintain at its boiling-point, but very much above the boiling-point of water. On this surface of hot quicksilver water was injected, which instantly converted into steam containing more heat than was sufficient to maintain it in vaporing form. This superheated steam worked the piston, and being subsequently condensed by a jet of fresh water, the mixture of warm water produced by the steam and the water injected was conducted through the cooling pipes, and subsequently used to supply the water evaporation, thus not only dispensing with the boiler, but also with sea water, the same distilled water constantly circulating through the cylinder and condenser. The experimental results were satisfactory, and a small boat fitted with Howard's engine was plying between London and Richmond during the summer of 1838. The result of the trial of the "Columbus" I have not ascertained, but it was probably unsuccessful, as this is the only notice of "Howard's quicksilver engine" I have been able to find.

1838.—THE "RAINBOW," built by John Laird, of Liverpool, for the General Steam Navigation Company in 1838, was an *iron* steamer of 580 tons, 190 feet between perpendiculars, 25 feet beam between the paddle-boxes, and 12¾ feet depth of hold. Her engines were of 180 horse-power. On one occasion she made the trip between London and Antwerp, a distance of one hundred and ninety nautical miles, in fourteen hours,—the quickest that had been made. On this vessel Professor Airy experimented on the effect of iron on the compass.[3]

1839.—THE "NORTH AMERICA," the first vessel with which it was attempted to open a steam communication between Halifax and Boston, performed the voyage in the autumn of 1839 from one place to the other in thirty-six hours, and on a second trip in twenty-nine hours, with very heavy weather.

1839.—STEAMERS TO INDIA.—The "Queen of the East," an iron steamship, the first of a line of steamers to ply between England and Calcutta, launched in 1839, was an iron ship of 2618 tons and 600 horse-power. Her extreme length was 312 feet, and between the perpendiculars 270 feet; beam, 45 feet; depth of hold, 30 feet; cylinder, 84 inches diameter; 9 feet stroke.

[3] Nautical Magazine, 1829.

The "India," the first vessel of the India Steam Navigation Company *via* the Cape of Good Hope, was one thousand two hundred tons, and had accommodation for eighty passengers. Her extreme length was two hundred feet; beam forty; depth forty. Her cargo capacity was four hundred tons. She had two plate iron bulkheads across the engine to confine accidental fire and prevent a leak spreading from one division to another. Three additional steamers were on the stocks for this company, and others to be immediately commenced.

1840.—THE "PROSERPINE" war-steamer of four hundred and seventy tons, built in England, 1840, had four sliding keels, nine water-tight bulkheads, two of which were longitudinal, running the entire length of the engine-room, and was armed with four long guns on non-recoil carriages. Her draught was four feet; her two engines were of forty-five horse-power each, and her paddle-wheels could be disconnected.

1840.—THE "PROPELLER," a small steamer with engine of twenty-four horse-power, built in England in 1840, had propellers of single blades of iron on each side, broad and large, which dipped into the water perpendicularly. The appearance of the propellers was like that of the legs of grasshoppers, and when in motion their action resembled the legs of that insect in its work.[4]

1841.—THE "CAIRO," built for the navigation of the Nile in 1841, was flat-bottomed to adapt her for the shallow waters of the Nile, having a draught of only two feet. She had two oscillating engines of sixteen horse-power each. She was an iron vessel and divided by water-tight bulkheads, with five compartments, and could accommodate one hundred persons in her cabins. Her average speed was guaranteed by her builders to be fifteen miles an hour.

1841.—THE "FIRE-FLY," of about two horse-power, fitted with a locomotive boiler, vibrating engines, and Ericsson screw propeller, attained a speed of nine miles an hour on the Thames at Oxford.

1839.—SCREW STEAMER "R. F. STOCKTON."—January 29, 1839, the "R. F. Stockton" (screw) towed the American packet-ship "Toronto," six hundred and fifty tons, and drawing sixteen and three-quarters feet of water, from Blackwall to the lower points of Woolwich, three and a quarter miles, in forty minutes, against a flood-tide running two to two and a half miles an hour.

"The fact of this ship having been moved at the rate of upward of six miles an hour, by a propeller measuring only six feet four inches in diameter, and occupying less than three feet in length, is one which, scientifically considered, as well as in a practical and commercial point of view, is of immense importance."[5]

1840.—THE "NEMESIS."—Captain W. H. Hall sailed from

[4] London Times, Oct. 10, 1840.

[5] Timbs, in the Year-Book of Facts for 1840.

Portsmouth in the "Nemesis," March 28, 1840. She was the first iron steamer that ever rounded the Cape of Good Hope. She arrived at Table Bay July 1, left on the 11th, but meeting with severe gales, put into English River, Delagoa Bay, to refit, which occupied three weeks, when she resumed her voyage up the Mozambique Channel to India and China, where she performed gallant service. She was one hundred and sixty-eight feet long, twenty-nine feet beam, and six hundred and fifty tons burthen. She was fitted with five water-tight compartments.

The "Archimedes," an iron screw steamer, in 1840 made an experimental trip around the island of Great Britain, or seventeen hundred and twenty-two miles in two hundred and ten hours, being on an average about eight and a half miles an hour.

The "Archimedes" was built by F. P. Smith's Archimedean Screw Propeller Company. After the experimental trials were over the engines were taken out and she was sold for a sailing-vessel.[6]

The first application of Hall's reefing paddle-wheels was to the iron steamer "Lee," in 1840.

COMPOUND ENGINES, 1829–1839.—A comparatively little known work, by C. A. Tremtsuk, published at Bordeaux in 1842, contains some interesting particulars of the steamers plying at that time on the Gironde and the Garonne. One of these vessels, the "Union," launched in June, 1829, had a compound-engine constructed by Hallette, of Arras. This engine had two inclined cylinders, the connecting-rods taking hold of the same crank-pin. The cylinders had diameters of 15 and 15.8 inches respectively, and the stroke in each instance was 26 inches. The engine was run at thirty revolutions a minute under a pressure of sixty-six pounds of steam. Another example of an early compound engine was in use in 1842 on board the steamer "Le Corsaire Noir." It was built in 1837 by Fol, Sr., of Bordeaux, and had three oscillating cylinders, two of them being each 10.78 inches in diameter, with 39.4 inches stroke, and the third having a diameter of 21.27 inches, with a stroke of 32 inches. The three cylinders acted on three different cranks. The two smaller cylinders received the steam from the boiler at a pressure of seventy-four pounds, and discharged it into an intermediate receiver, from which it passed to the large cylinder and then to the condenser.[7]

1839.—The steamer "Argyle" sailed from Liverpool April 6, 1839, for New Orleans *via* Cadiz and Madeira; and the "Chili" sailed

[6] See *ante*, Chapter III.

[7] Benjamin, in his paper on "Ocean Steamships," in the *Century*, September, 1882, says, "The compound engine was invented by Hornblower in 1781." Also "that Allaire made such an engine for Eckford in 1825."

Hornblower's engine is not mentioned in the Abridgment of Patents for Marine Propulsion, published by the British Patent Office.

from Falmouth, and the "Peru" from London, July 2, 1839, for Valparaiso and Callao *via* Rio Janeiro.

1839.—THE FIRST TRIAL OF STEAMERS IN BATTLE.—The attack upon St. Jean d'Acre, November 3, 1839, by the allied squadrons of England, Austria, and Turkey, under the command of Commodore Sir Charles Napier, was the first occasion on which the advantages of steam was tried in battle. Four English paddle-wheel steamers—viz., the "Phœnix," "Gorgon," "Strombolo," and "Vesuvius"—were engaged in the action, and the shells thrown from them did prodigious execution; they were enabled with rapidity to take up the most advantageous positions and rendered great assistance during the bombardment.

1840.—A VESSEL PROPELLED BY PRESSURE-PUMPS.—The Edinburgh *Observer* of 1840 says, "An ingenious mechanic residing at Grahamstown has been for a long period engaged in constructing a small vessel to be propelled by pressure-pumps. The boat was launched into the Forth and Clyde Canal at Bainsford Bridge, and proceeded along the reach at a rate of not less than fifteen miles per hour, conducted by the inventor alone, who worked the pumps. He had no doubt that his invention would entirely supersede the use of paddle-wheels."

The London *Morning Chronicle* for 1840 says, "Experiments were tried with a model of an entirely new form of steam-vessel, and with every prospect of a successful result. In this remarkable invention there are no paddle-wheels nor external work of any kind. The whole machinery is in the hold of the vessel, where a horizontal wheel is moved by the power of steam, and, acting upon a current of water admitted by the bows and thrown off at the stern, propels the vessel at a rapid rate. By a very simple contrivance of stop-cocks, etc., on the apparatus, the steamer can be turned, retarded, stopped, or have her motion reversed."

An officer of the United States navy obtained a patent in 1840 for a similar improvement; his model was examined by scientific gentlemen in Washington, who highly approved of it. The whole machinery was situated below the water-line, out of reach of shot.

1840.—THE CUNARD LINE ESTABLISHED.—Samuel Cunard, of Halifax, in 1840, started the line of ocean steamers known by his name. It was the first permanently successful line of transatlantic steamers. The "Britannia," the first regular steamer of the line, left Liverpool, July 4, 1840, and arrived at Boston, July 18, 1840, fourteen days and eight hours from Liverpool.

Cunard had for years conducted a line of packet-brigs between Halifax and England,—tub-like vessels widely known as coffins, several having foundered under the wintry waves of the Atlantic. Mr. Cunard accepted a subsidy and laid the keels of four steamers of eight

hundred tons to run from Halifax to Boston. On his return by the "Great Western" he was encountered at Bristol by news from America. Resolutions favoring the enterprise had been presented at a large meeting in Boston and adopted by acclamation. With these in hand, Cunard waited on the Admiralty. "See," he says, "my predictions are verified. I told you the boats were too small; the Bostonians say they must come through to Boston, and that they will settle the question of the Northeast boundary. Give me ten thousand pounds more and I will enlarge the steamers and extend my route to Boston." They gave him the additional sum; he went back to Glasgow, broke up the keels already laid, and built the "Britannia," "Acadia," "Caledonia," and "Columbia," the pioneers of his line to America. The "Unicorn," a chartered vessel, was the first vessel of the Cunard line to cross the Atlantic, but the "Britannia" was the first regular vessel to arrive at Boston.

1842.—The paddle-wheel steamer "Bangor," from Boston, *via* Halifax and Pictou, arrived at Fayal on the 19th September, 1842, in ten days from the latter port, and left on the 21st for Constantinople, touching at Gibraltar and Malta. She was at one time the steam-yacht of the Sultan, and later employed in conveying Mahommedan pilgrims towards Mecca. She was a side-wheel steamer, built in New York to ply between Boston, Portland, and Bangor, Maine, and was some time on that route. On her voyage to Gibraltar her lower cabins were converted into coal-bunkers and her upper cabins removed.

1840.—The French Steam Navy.—The French steam navy in 1840 consisted of the following paddle-wheel steamers,—viz., the "Lavoisier," 220 horse-power; "Véloce," 220; "Chaméléon," 220; "Gassendi," 220; "Majeur," 160; "Sphinx," 160; "Ardent," 160; "Crocodile," 160; "Fulton," 160; "Chimére," 160; "Styx," 160; "Météore," 160; "Vulture," 160; "Phare," 160; "Acheron," 160; "Papin," 160; "Cerberus," 160; "Tartar," 160; "Etna," 160; "Brandon," 160; "Cocytes," 160; "Phaeton," 160; "Tonnerre," 160; "Euphrates," 160; "Gregerois," 160; "Grondeur," 160; "Ramier," 150; "Castor," 150; "Brasier," 100; "Coureur," 80; "Flambeau," 80; "Corsier," 60; "Erebus," 60; "African," 40; and seven other boats on the stocks,—viz., the "Asmodeus," "Pluto," "Infernal," "Gomore," "Tonare," "Cuvier," and "Chaptal," which gave France an effective force of forty-one steamboats, whilst the English had nearly twice as many. The "Gomore," of four hundred and fifty horse-power, was to carry thirty-four guns under a covered battery, and the "Infernal" was of three hundred and twenty horse-power.

On the other hand, the English had the "Cyclops," which could mount sixteen long thirty-twos, four pieces of forty-eight on its quarter-deck, and two of ninety-six,—twenty-two guns in all. She could carry coal for twenty-five days' steaming, and take one thousand soldiers

on her deck, four hundred troops across the Atlantic, or three hundred to India. Her usual rate of sailing was eleven knots an hour. She beat in sailing, and without using the engine, the "Pantaloon," the fastest sailing brig in the royal navy, in a passage of three hundred miles. Her crew comprised two hundred and twenty seamen in time of war, and one hundred and seventy-three during peace. Independent of her war steamboats, Great Britain had immense resources in her commercial steam navy, which consisted of eight hundred and ninety-nine steamboats, aggregating a force of sixty-eight thousand one hundred and forty-five horse-power. Among these were thirty-three steamboats, of from four hundred and fifty to seven hundred horse-power, which traded to the United States, South America, and India.

1842.—EARLY SCREW STEAMERS IN GREAT BRITAIN.—The London *Nautical Magazine* for 1842 notes the following vessels with *screw propellers* as having been built or then being built in Great Britain,—viz.:

ALREADY BUILT.

"Archimedes,"	237	tons,	70	horse-power, belonging to	London.
"Princess Royal,"	101	"	45	" "	Brighton.
"Bee,"	30	"	10	" "	Portsmouth.
"Beddington,"	270	"	60	" "	South Shields.
"Novelty,"	300	"	25	" "	London.

BUILDING.

"Great Britain,"	3600	tons,	1000	horse-power, belonging to	Bristol.
"Rattler,"	800	"	200	" "	"
Two for the French government of 230 horse-power.					
One " " " " 350 "					

Propellers had been fitted to other vessels with various success. The old river steamer "Swiftsure" was fitted with one, and an increased speed attained by it. The "Great Britain" is described as the "largest vessel in the world;" but the most notable feature about her is her newly-improved screw-propeller, patented by Mr. Smith, of London, and applied by him with complete success to the "Archimedes."

Henry Winhault, who launched the "Novelty" on the Thames, in 1843, claims she was the first screw propeller ever used to carry freight.

The "Napoleon," of one hundred and thirty horse-power, built in Havre in 1842, was the first French steamer propelled by the screw.

In 1842 steam navigation was established on the Indus. The iron steamers "Planet" and "Satellite," originally intended for the Rhine, were purchased by the East India Company, sent out in sections, and put together in the dock-yards in Bombay. In 1844–45 the "Napier," "Conqueror," and "Menace" were added to the line; all these had engines of sixty horse-power.

In 1842 her Britannic Majesty's steamship "Driver" circumnavigated the globe, the first steamship to perform this feat.

1841.—THE FIRST STEAM LAUNCH.—The "Jane," a steamer twenty-six feet long, with five feet beam, and of less than three tons tonnage and one horse-power, attained in smooth water a speed of seven miles an hour. She was built by Mr. Blaxand, of Greenwich, and her propelling power was two screw paddles at the stern. The machinery was worked by straps and friction-pulleys, so arranged as to avoid the wear and tear of gears.

1842.—Captain Carpenter, of her Majesty's steamship "Geyser," in 1842 had her pinnace fitted with his patent propeller and a small engine of five to six horse-power. The pinnace was thirty feet in length, nine feet wide, and capable of carrying three tons. Her "disk" engine weighed six hundredweight, and measured three feet by one and a half. The engine and boiler were so fitted to the pinnace that they could be taken out or replaced in five minutes.

1841.—AN ICE-CUTTING STEAMBOAT was invented by M. C. Hiorth, a Dane, in 1841, which could cut its way through the thickest ice with a speed nearly equal to that of an unimpeded navigation.

1843.—THE "PRINCETON."—Screw propulsion was introduced into the United States navy, and, it may be said, into the United States, in 1843 by the construction of the "Princeton," a steamship classed as a second-rate sloop-of-war.

This vessel was designed by and constructed under the superintendence of Captain John Ericsson, a Swede by birth, but a resident of New York. *She was the first screw steam war-vessel ever built.*[8]

Her dimensions were:

Length on deck	164 feet.	
Length between perpendiculars	156 "	
Extreme beam on deck	30 "	6 inches.
Depth of hold to berth-deck	14 "	
Depth from berth to spar-deck	7 "	"
Total depth of vessel	21 "	"
Measurement burden	673 tons.	
Launching weight of hull	418 "	
Displacement at 16½ feet draught	954 "	
" " 18 " "	1046 "	"
Immersed midship section at 16½ feet draught	346 square feet.	
" " " " 18 " "	390 "	"
Draught of water at deepest load, with 200 tons of coal on board	19 feet 4 inches.	
Draught of water, with 100 tons of coal in, after bunkers and provisions and water for the crew half out	forward 14¾ feet.	
	aft 18¼ "	
Mean draught of water with half coal out and all other weights full	17 feet.	

The peculiarity of her model consisted in a very flat floor amidships, with great sharpness forward and excessive leanness aft, the run

[8] Her Majesty's ship "Rattler," the second screw war-vessel, was launched after the "Princeton."

being remarkably fine, with a great extent of dead-wood terminating in a stern-post of the unusual thickness of twenty-six inches at the centre of the propeller-shaft, but tapering above and below. This dead-wood and stern-post was pierced by a hole thirteen inches in diameter.

Other of her peculiarities were that for the *first time in a vessel of war all of her machinery was placed entirely below the water-line, out of reach of shot.* She was also the first war-steamer to burn anthracite coal, thus avoiding the dense volumes of black smoke which revealed all foreign war-steamers. She was also the first steamer provided with telescopic funnels, to be lowered out of the way of the sails, and the first to use blowers. She was provided with direct-acting engines. Ericsson, who devised her, was the first also to couple the screw directly to the engine.

An eye-witness has described a remarkable race between the "Princeton" and the "Great Western," the fastest ocean paddle-wheel steamer of the day. The "Great Western" was aware that the new United States war-vessel propelled by an unseen instrument intended to run with her a sufficient distance for a fair trial of the relative speed of the two vessels, and was therefore fully prepared.

On the day in question, shortly after the "Great Western" had passed the Battery in the New York harbor, with volumes of dense smoke pouring from her pipe, her paddle-wheels leaving a snow-white wake behind them, the "Princeton" came down the Hudson at great speed. She looked like a fine model of a sailing-ship, with yards squared and not a stitch of canvas spread; no smoke-pipe visible, it being lowered level with the rail; no smoke to be seen, anthracite being the fuel supplied, but propelled by a noiseless and unseen agency. She soon reached and passed the "Great Western" and steamed around her, and passed her a second time before the two reached their points of final separation.

Captain Stockton, who may be said to have been her originator, superintended her construction and was her first captain. In a letter to the Secretary of the Navy, he thus describes the "Princeton."

UNITED STATES SHIP "PRINCETON,"
PHILADELPHIA, February 5, 1844.

SIR,—The United States ship "Princeton" having received her armament on board, and, being nearly ready for sea, I have the honor to transmit to you the following account of her equipment, etc.:

The "Princeton" is a full-rigged ship of great speed and power, able to perform any service that can be expected from a ship of war. Constructed upon the most approved principles of naval architecture, she is believed to be at least equal to any ship of her class with her sail, and she has an auxiliary power of steam, and can make greater speed than any sea-going steamer or other vessel heretofore built. Her engines lie snug in the bottom of the vessel, out of reach of an enemy's shot, and do not at all interfere with the use of the sails, but can at any time be made

auxiliary thereto. She shows no chimney and makes no smoke, and there is nothing in her external appearance to indicate that she is propelled by steam.

The advantages of the "Princeton" over both sailing-ships and steamers propelled in the usual way are great and obvious. She can go in and out of port at pleasure, without regard to the force or direction of the wind or tide or the thickness of the ice. She can ride safely with her anchors in the most open roadstead, and may lie to in the severest gale of wind with safety. She cannot only save herself, but will be able to tow a squadron from the dangers of a lee shore. Using ordinarily the power of the wind and reserving her fuel for emergencies, she can remain at sea the same length of time as other sailing-ships. Making no noise, smoke, or agitation of the water (and, if she chooses, showing no sail) she can surprise an enemy. She can take her own position and her own distance from an enemy. Her engines and water-wheel being below the surface of the water, safe from an enemy's shot, she is in no danger of being disabled, even if her masts should be destroyed. She will not be at daily expense for fuel as other steamships are. The engines, being seldom used, will probably outlast two such ships. These advantages make the "Princeton," in my opinion, the cheapest, fastest, and most certain ship-of-war in the world.

The equipments of this ship are of the plainest and most substantial kind, the furniture of the cabins being made of white pine boards, painted white, with mahogany chairs, table, and side-board, and an American manufactured oil-cloth on the floor.

To economize room, and that the ship may be better ventilated, curtains of American manufactured linen are substituted for the usual and more customary and expensive wooden bulkheads, by which arrangement the apartments of the men and officers may in an instant be thrown into one, and a degree of spaciousness and comfort is attained unusual in a vessel of her class.

The "Princeton" is armed with two long 225-pounder wrought-iron guns and twelve 42-pounder carronades, all of which may be used at once on either side of the ship. She can consequently throw a greater weight of metal at one broadside than most frigates. The big guns of the "Princeton" can be fired with an effect terrific and almost incredible, and with a certainty heretofore unknown. The extraordinary effects of the shot were proved by firing at a target, which was made to represent a section of the two sides and deck of a 74-gun ship, and timbered, kneed, planked, and bolted in the same manner. This target was five hundred and sixty yards from the gun. With the smaller charges of powder the shot passed through these immense masses of timber (being fifty-seven inches thick), tearing it away and splintering it for several feet on each side and covering the whole surface of the ground for a hundred yards square with fragments of wood and iron. The accuracy with which these guns throw their immense shot (which are *three feet* in circumference) may be judged by this: the six shots fired in succession at the same elevation struck the same horizontal plank more than half a mile distant. By the application of the various arts to the purposes of war on board the "Princeton," it is believed that the art of gunnery for sea service has for the first time been reduced to something like mathematical certainty. The distances to which these guns can throw their shot at every necessary angle of elevation has been ascertained by a series of careful experiments. The distance from the ship to any object is readily ascertained with an instrument on board, contrived for that purpose by an observation which it requires but an instant to make, and by inspection without calculation. By self-acting locks the guns can be fired accurately at the necessary elevation, no matter what the motion of the ship may be. It is confidently believed that this small ship will be able to battle with any vessel, however large, if she is not invincible against any foe. The improvements in the art of war adopted on board the "Princeton" may be productive of more important results than anything that has occurred since the invention of gunpowder. The numerical force of other navies, so long boasted, may be set at naught. The ocean may again become

neutral ground, and the rights of the smallest as well as the greatest nations may once more be respected. All of which, for the honor and defense of every inch of our territory, is most respectfully submitted to the honorable Secretary of the Navy, for the information of the President and Congress of the United States.

By your obedient and faithful servant,

R. F. STOCKTON,
Captain U. S. Navy.

To HON. DAVID HENSHAW,
Secretary of the Navy.

The "Arrogant," the first war-propeller vessel planned as such by the English,[9] four or five years after the date of the United States steamer "Princeton," had cylinders of nearly the same capacity as her American prototype, yet her engines occupied two thousand eight hundred and twelve cubic feet, while those of the "Princeton" occupied but seventeen hundred and thirty-eight feet. The "Princeton's" engines weighed eighty-five tons; the "Arrogant's," built by the eminent engineer, Penn, were much heavier.

The hull of the "Princeton," having been built of white oak, was found to be too rotten for repair in 1849 and was broken up. Her performance was not excelled by any screw steamer of her time, relatively with the fuel she consumed. At sea she worked and steered admirably, either under sail alone or with sail and steam. She was a very dry vessel, but, owing to the sharpness of her hull fore and aft the midship section, she pitched in a rough sea with great violence. With a fair amount of canvas and a moderate wind she would careen to an extent unusual in a vessel of her class, but, though she thus easily went down to her bearings, it took additionally a very large quantity of canvas and a strong wind to depress her sensibly further. In a heavy gale clawing off a lee shore she carried sail to a greater extent than was considered prudent by other sailing sloops-of-war in her company; all of them, and some frigates, she beat out to windward, dragging her propeller.

After the hull was broken up the machinery of the vessel remained in store at the Boston Navy-Yard until the summer of 1851, when the department ordered a new clipper hull to be built at that yard, of increased dimensions, to receive the Ericsson semicylinder engines, to have new boilers, and a propeller of suitable proportions for this enlarged "Princeton." The new vessel, built of live oak and copper fastened, was beautiful to look at, but her performance did not equal expectation. It was a case of putting old wine into new bottles. She performed very little service at sea, was used as a receiving vessel at Philadelphia, and was sold in that city in 1867. Her armament was four 8-inch guns of 58 hundredweight and six 30-pounder guns of 32 hundredweight. Her dimensions were: Mean length at load-

[9] The "Rattler" was originally laid down for a paddle-wheel steamer, and her plans changed on the stocks to a screw.

line, 177.5 feet; extreme beam, 32.66 feet; depth, 25.75 feet; displacement at mean load-line, 1370 gross tons. She was ship-rigged.

1840.—The Royal Steam Navy in 1840 consisted of between thirty-eight and fifty paddle-wheel steam-vessels of all classes. During the next three years—1842–44—eight screw vessels were *ordered* to be built, but the "Rattler" was the first that was launched. This number was augmented by twenty-six in 1845. In 1848 there were forty-five screw steamers in the Royal Navy.

In 1845 the Queen reviewed the channel fleet, the *steam* branch being on that occasion represented by one solitary ship, the "*Rattler*," the first screw steamship added to the Royal Navy. In 1853, when the Queen again reviewed the fleet at Spithead, the steam branch had increased in the intervening eight years to twenty-seven paddle-wheels and thirteen screws, while there were only three sailing-ships present.

An official report of the result of various trials of the performance of screw steamers, dated May, 1850, states it "as highly probable that fine sailing-vessels, fitted with auxiliary screw-power, would be able, if not to rival, at least to approach full-powered and expansively-acting steamships in respect of their capability of making a long voyage with certainty and in a reasonably short time." "Another application of the screw, although inferior in general importance to its application as a propeller to ordinary ships," says the same report, "is as a manœuvrer to those large ships in which engines of considerable power cannot be placed, or in which it is considered unadvisable to place them. No doubt can be entertained of the efficiency of such an instrument worked by an engine of even fifty horse-power. The full extent of its utility, however, cannot perhaps be thoroughly appreciated until it shall have been extensively used in Her Majesty's navy."

1843.—The H. M. S. "RATTLER," the first screw vessel of war of the Royal Navy, was ordered to be altered when on the stocks to test the method of screw propulsion. She seems to have been built to see if a propeller would really propel a vessel. Her engines were a set of ordinary paddle-wheel engines attached to the screw by means of gearing, and of course projecting above the water-line. That the experiment might be conclusive, so far as a trial could be made between two vessels, she was constructed on the same lines as the "Alecto" (her after-part being lengthened for the insertion of the screw), and she was fitted with engines of the same power, and on a plan which had previously been tried with paddle-wheel vessels. So doubtful were the Lords of the Admiralty of her success that the space on her broadside where paddle-wheels were usually inserted was kept clear of gun-ports that wheel-houses might be appended in case of the non-success of her screw; and this was the state of her broadside when she was in China, in 1853–54.[10]

[10] My informant of this fact was Captain Abel Fellowes, R.N., who commanded her at that time.

The "Rattler" was launched from Sheerness Dock-Yard in April, 1843. She was considered a remarkably fine model, and of very unusual length in proportion to her beam, her dimensions being one hundred and ninety-five feet extreme length, thirty-three feet extreme breadth, and eighteen and one-half feet mean depth of hold. Her burden was eight hundred and eighty-eight tons. The river trials of the "Rattler" lasted from October, 1843, to the beginning of 1845, and showed that the screw-shaft might be advantageously reduced in diameter, and the blades reduced by one-third of their length; an alteration which greatly reduced the weight of the screw, and facilitated the shipping and unshipping of it, and also rendered unnecessary the wounding or weakening to so great an extent the after part of the vessel. The result of the experiments with the "Rattler" was that the aperture in future vessels might be of very moderate dimensions without lessening the propelling power of the screw, and that in smooth water the screw was not inferior to the paddle-wheel. Early in 1845 the "Rattler" proceeded, in company with the "Victoria and Albert" and the "Black Eagle," from Portsmouth to Pembroke. When rounding Land's End, both these vessels steaming against a strong head-wind, their paddles being constructed on the feathering principle, proved superior to the "Rattler," which left an unfavorable impression as to the efficiency of the screw against wind and sea in heavy weather, and this impression continued for several years, although when next tried, in a run from the Thames to Leith, in speed she was decidedly superior to paddle-wheel steamers of greater tonnage. Before joining the squadron of Rear-Admiral Hyde Parker, in July, 1845, the "Rattler" was employed to tow the "Erebus" and "Terror" to the Orkney Islands on their fatal expeditions to the North Pole.

In 1843 Count Adolph E. de Rosen, the agent of Ericsson, received an order from the French government to fit a forty-four gun frigate, the "Pomone," with an Ericsson propeller with engines of two hundred and twenty horse-power, which were to be located beneath the water-line, as in the case of the "Princeton." The next year the English government gave Count Rosen instructions to fit the frigate "Amphion" with a propeller and with engines of three hundred horse-power, which were to be fixed below the water-line like those of the French "Pomone." The engines of these vessels were the first engines in Europe which were kept below the water-line. They were also the first *direct acting* horizontal engines employed to give motion to the screw. Both vessels were completely successful.[11, 12]

When the screw propeller was first tried in the British navy it was not supposed by anybody that the small section at present used would be enough; it might for anything that was then decided be a screw of one complete turn upon its axis. Upon that supposition the "Rattler"

[11] Bourne on the screw propeller. [12] See page 174.

was lengthened by the stern sufficiently for a long aperture; in consequence the run at the fore part of the aperture was constructed of such a degree of fineness as to be most favorable to the efficacy of the screw. The correctness of form in this case was purely accidental.

1844.—THE FIRST STEAM WHISTLE ON THE MISSOURI.—The use of the steam-whistle on the Missouri River dates back to 1844. At that time the settlers on the Missouri River were in the habit of making yearly visits to St. Louis to do their trading for themselves and friends. They were not provided with daily intercourse with the outside world, and many who lived back from the river seldom if ever saw a steamboat more than once a year. During the fall of the year 1844 the new steamboat "Lexington" started up the Missouri River loaded down to the guards with freight. Among the passengers were Judge Joseph C. Ransom, Theodore Warner, of Lexington, and Ben Holliday, afterwards the famous overland stage proprietor; Colonel Pomeroy, of Lexington, and a planter of Platte County, named George Yocum.

The steamer "Lexington" was provided with a steam-whistle,—the first used on the Missouri,—and no one knew about it except Warner, who was a wag and a lover of a joke. The night after leaving St. Louis the passengers were collected together playing cards in the cabin, when the talk turned upon steamboat explosions, then very common. "I feel perfectly safe on this boat," said Warner, as he dealt the cards.

"Why?" inquired Yocum, the planter.

"Why?" echoed the rest of the company.

"I will tell you why," said the wag, carefully studying his cards; "this boat is provided with a new patent safety-valve, which notifies the passengers on board when it is about to blow up. It is a concern which makes a most unearthly noise, and when you hear it, it is time to get back aft or jump overboard."

Notwithstanding that Warner told his story with the most solemn and earnest countenance, some were sceptical. Not so, however, the planter. Next morning, when the "Lexington" was steaming up the straight stretch of river below Washington, Missouri, the passengers were at breakfast, and busily engaged in doing justice to the meal. Suddenly the whistle commenced to blow for the first time on the trip. The passengers looked at each other a moment, and horror and dismay spread itself over their faces. The first man to realize the situation was Yocum, the planter, who, with hair erect and blanched face, jumped up, crying,—

"Run, run for your lives; the derned thing's going to bust. Follow me, and let's save ourselves."

Of course, there was a stampede for the rear of the boat, and it was only by the exertions of some of the crew that the more excited were restrained from jumping into the river.

1844.—The First English Steam Collier was built in 1844. She was bark-rigged. The "King Coal," as she is appropriately called, one of the latest, was contracted for in 1870, and cost complete for sea fifteen thousand pounds. She carries nine hundred tons coal cargo, with burden space for one hundred tons more, and has extra water-ballast when she has no cargo on board; against strong winds her speed is eight and a half knots an hour loaded, and from nine and a half to ten knots in fine weather when light; her power, ninety horse-power, nominal. She has a saloon-cabin on deck for the captain, with four berths aft, and accommodation for chief mate and steward forward. Her crew, all told, is seventeen. Her voyages from New Castle to London and back usually occupy six to eight days. Hoisting sails, lifting the anchor, and other heavy work are done by steam winches. The crew have a roomy and well-ventilated forecastle level with the main-deck; the seamen occupy one side, the stokers the other, with a bulkhead between. The engineers have cabins on deck in the bridge-house. The wheel-house is amidship and the helmsman is protected from the weather.

The ordinary sailing collier delivered in the course of the year under the most favorable circumstances three thousand five hundred tons of coal. The screw collier, with a complement, all told, of seventeen men, conveys annually, on the same round, fifty thousand tons. Steam colliers have been generally adopted in the United States, and the Reading Company has quite a fleet of them.

1844.—Steam propellers, carrying principally freight, but some passengers, commenced navigating Long Island Sound in 1844. The first was called the "Quinebaug."

1844.—The "Midas."—The propeller schooner "Midas," Captain William Poor, owned by R. B. Forbes, of Boston, left New York for China, November 18, 1844. She was the first American steam vessel that passed beyond the Cape of Good Hope, and was the first American screw steamer to ply in the waters of China. She was disabled by neglect to her boilers, and came home *via* Rio Janeiro under sail, and ran for a long time after between Savannah and Rio Janeiro as a sailing-vessel.

1845.—The "Edith."—The propeller bark "Edith," Captain George W. Lewis, owned by R. B. Forbes, left New York for Bombay and China January 18, 1845. She proceeded from Bombay to China in twenty-one and one-half days, beating all competitors. She was the first American steamer that visited British India, and the first square-rigged propeller that went to China under the American flag. She was purchased by the United States government during the war with Mexico, and after running in the Gulf of Mexico for a year went around Cape Horn, and was lost near St. Barbara, on the coast of California.

THE "IRON WITCH."—In April, 1845, R. B. Forbes contracted with Ericsson to build an iron paddle-wheel steamer of great speed, called the "Iron Witch." She was about three hundred feet long, and was the first *iron* passenger steamer that plied on the North River. She had side propellers in place of paddles, but was not fast enough to compete with the Albany boats. Her engines were, therefore, taken out and put into a wooden vessel called "The Falcon," which was bought by George Law, and was the first steamer under the American flag that plied to Chagres, in connection with the California route.[13]

1845.—AUXILIARY STEAMSHIPS FOR THE ROYAL NAVY ORDERED.—The commissioners appointed to inquire into the state of the national defenses of Great Britain recommended that several ships of the line should be fitted with steam machinery and screw propellers, and the Board of Admiralty in 1845 issued an order to prepare the "Blenheim," "Ajax," "Edinburgh," and "Hague," 72-gun ships, for adaptation to screw steamers. Four 42-gun frigates were ordered to be similarly prepared. The "Blenheim" was lengthened and altered at an outlay of above forty-three thousand pounds on her hull, and twenty-five thousand pounds for machinery before she was completed as a guard ship. The expense of altering and adapting the other vessels was much less.

The term "auxiliary," which has been found a most convenient application when a steam vessel does not come up to the anticipated speed, came from England, and in the British navy was never designed for new vessels, but only for those sailing vessels already built which could not be driven beyond a moderate speed. The screw was added to save condemnation.

1845.—THE "EREBUS" AND "TERROR."—The two vessels of Captain Franklin's ill-fated expedition in search of the Northwest passage, which sailed from England on the Queen's birthday, May 24, 1845, were provided with a small steam-engine and screw, intended for use in calms.

1845.—Early in 1841, Thomas Butler King, of Georgia, for many years chairman of the committee of the United States House of Representatives on naval affairs, introduced a resolution directing the Secretary of the Navy to advertise for proposals for mail steamships to European ports, and for a coastwise line between the North and South. Persevering in his efforts from session to session, he succeeded in having a bill passed in 1845 placing the arrangement for the transportation of the mails to foreign countries under the direction of the Postmaster-General, and authorizing him to solicit proposals for several routes. This led to the formation of the Ocean Steam Navigation Company of New York, which in 1847 built and placed the "Washington" and the "Hermann" on the route to Southampton and

[13] See account of George Law's line in succeeding pages.

Bremen. They were the first American ocean steamships after the "Savannah," and at the time of their construction the best specimens of sea steamers our constructors and engineers had produced. Their average passages from Cowes to New York were thirteen days, fourteen hours, and fifty-three minutes; from New York to Cowes, fourteen days, seven hours, and seventeen minutes. The contract between this "Ocean Steam Navigation Company" and the United States was for them to carry the United States mails between New York and Bremen twice a month, touching at Cowes, the compensation to be two hundred thousand dollars per annum. The two steamships were two hundred and twenty-four feet long, thirty-nine feet broad, and twenty-nine feet deep, and measured seventeen hundred tons. At the expiration of the contract the line was discontinued, the steamers were sold, and transferred to the Pacific, where in 1863 the "Hermann" was broken up, and a few years later the "Washington" was wrecked.

1845.—THE UNITED STATES STEAMER "WATER WITCH."—The first iron steamer built for the United States navy was the "Water Witch." She was intended as a water-tank to supply the vessels of the Portsmouth (Va.) Navy-York with water, and was originally fitted with Hunter's horizontal submerged wheels. She proved too large for the purpose intended, and was then fitted for a harbor vessel and tug. Her performance not being satisfactory, she was taken to Philadelphia, cut in two, and lengthened thirty feet at the centre, the width being also increased six inches. The whole machinery was taken out and she was fitted with a Losser propeller. In 1849 she was again fitted with entirely new machinery, without alteration of hull, and fitted with ordinary paddle-wheels at the sides. In 1852 the iron hull, as originally constructed, proving too narrow for an efficient and safe war steamer, it was used as a target for experiment gun-practice at Washington, and a new one of wood of enlarged proportions and greater strength was ordered by the Department. Thus, like the boy's jack-knife that by repairs was changed, both blades and handle, until it was questionable whether he could call it the old knife or a new one, the iron submerged wheel, water-tank, propeller, and paddle-wheel steamer "Water Witch" became at last a wooden paddle-wheel boat of increased dimensions, having both a new hull and new engines. She was finally surprised and captured by the rebels during our Civil War and destroyed by them.

1845.—THE "MASSACHUSETTS."—Captain R. B. Forbes says, "In 1845 I built the auxiliary steam propeller 'Massachusetts' for myself and others, and sailed in her on the 15th of September, or thereabouts, from New York for Liverpool, and arrived on the 2d of October, having used steam nearly eleven days out of seventeen and a half. This was the first packet-ship under steam that started and performed more than one complete voyage between the United States and England

under the American flag, and was the first propeller that was put into the trade." The propeller "Marmora" went to England before the "Massachusetts," on her way to the Mediterranean, and the steamer "Bangor" (paddle), which had been a packet between Boston and Portland, Maine, went to Gibraltar; but the "Massachusetts" was the first regular steam packet-ship between the United States and England under our flag.

The propeller of the "Massachusetts"[14] was of composition metal, nine feet in diameter. She had two cylinders of 17,640 cubic inches each, set at right angles. The propeller was contrived to take out of the water at pleasure, and when out of water the ship was a perfect sailing-ship of about seven hundred tons. She made two voyages from New York to Liverpool and back, and was then chartered, and afterwards sold to the War Department. General Scott had his flag on board the "Massachusetts" at the taking of Vera Cruz. She was transferred to the Navy Department and went through the Straits of Magellan to California.

During the Civil War her engines, which were designed by Ericsson, were taken out and she was refitted as a storeship and renamed the "Farralones." After the war she was sold in San Francisco and renamed the "Alaska," and was engaged in carrying wheat from that port to Liverpool, and, for aught I know, "still lives."

1846.—STEAMBOATS ON THE THAMES.—In 1846 there were eleven steamboats running between London and Westminster Bridges on the Thames at *one penny* the trip, making thirty-two trips in the hour, or three hundred and twenty trips per diem. Assuming forty as the average number of passengers for each trip, the daily total would be fifteen thousand, and the return trip being the same, one hundred and twenty-five pounds was about the daily receipts of these boats. The time of each trip varied from one-quarter to one-half hour.

1846.—THE "OREGON."—The Hudson River steamer "Oregon," the most magnificent steamer afloat in 1846, it is said maintained a speed against a west-northwest gale and head sea of twenty miles per hour. In calm weather she made an average speed of twenty-five miles per hour. Her length was three hundred and thirty feet, by thirty-five feet width of beam, and her measurement one thousand tons, with berth accommodations for six hundred passengers. Her engine was of eleven hundred horse-power, and had a seventy-two-inch cylinder with eleven feet stroke. On the main deck, the inclosed space from the ladies' cabin forward formed a promenade two hundred feet long. The massive engine in the centre, and four or five side parlors, fitted up with ten or twelve berths each, opened out over the guards, as also a smoking-room, denominated the "Exchange," and

[14] Portraits of the "Massachusetts" and "Edith" are preserved in the Naval Library and Institute at the Boston Navy-Yard.

the wash-room and barber's shop,—the latter fitted up with marble slab, Croton water, wash-bowls, etc. In the main cabin a continuous line of berths extended over three hundred feet from end to end of the boat, numbering some two hundred. This included the after-cabin, which was connected by an ample passage-way with the forward one. Five hundred yards of carpeting covered the floors in these cabins. Each berth was fitted with Mackinaw blankets and Marseilles quilts, having the name of the steamer worked in them. A thirty-pound mattress, and also bolsters and pillows, with linen of the finest quality, completed the equipment of the berths. The curtains were of satin de laine of rich tints, with embroidered inner curtains.

"A portion of the after-cabin was set aside for ladies, and distinguished by extra trimmings, blue and gold curtains, etc. The dining-saloon accommodated two hundred and fifty persons. The table service was of the richest French china, every article marked with the name of the steamer; the glassware was heavy star-cut. . The silver-plated ware was of Prince Albert pattern, very heavy and costly. But the transition from this show-room to the ladies' upper cabin was as great as from that of a common ferry-boat cabin. There the magnificent fittings dazzled the eye. Nothing was wanting which could add richness, splendor, or luxury. There were seven tiers of berths and three state-rooms upon each side, the cabin being seventy feet long. At the extreme stern was the wash-room, fitted with even more comfort than that for gentlemen. Each side of the entrance were full-length mirrors that at first glance were often mistaken for doors opening into another cabin. The state-room doors were of enameled white, richly gilt, and their interior embellishments, like the cabin, splendid and beautiful. The front of the ladies' cabin from the main-deck was splendid. The architecture was plain, with an enameled white ground profusely gilt, with raised flowers upon the gilt pillars. A time-piece was placed over the door and stained glass around it."

The "state-room hall" on the upper deck was two hundred and twenty feet long by sixteen wide, except the space occupied by the engine in the centre. Out of it opened sixty state-rooms, furnished in sumptuous style; three were double ones, and a fourth was fitted up as a "bridal-room" with good taste, and with a wide French bedstead, etc.

Forward of this hall was a lounge, from which there was an unobstructed view ahead of the progress of the boat and passing objects. Astern was a promenade-deck. State-room hall and main cabin were adorned with superb mirrors set in rich frames. The cost of the furniture and fittings was thirty thousand dollars, and of the boat itself one hundred and thirty thousand dollars. She was built under the superintendence of her commander, Captain St. John, and her symmetry, the beauty of her model, and the arrangement of her

engines, which gave her unrivaled speed, were the result of his long and practical experience.

1846.—First American Mail Steamships.—The first regular American ocean mail steamship was the "Southerner." She was built in 1846 and put on the route between New York and Charleston, South Carolina. She was followed by the "Falcon" and others in the trade to Southern ports.

1847.—The first French Atlantic steamer arrived at New York from Cherbourg on the 8th of July, 1847.

1847.—The "United States."—W. H. Webb in 1847 built for Messrs. C. H. Marshall & Co., the owners of the celebrated Black Ball line of packet-ships, for the New York and Liverpool trade, the steamer "United States," of two thousand tons burden, which in April, 1848, sailed on her first voyage to Liverpool. She was the first American steamer built for the Atlantic Ocean freight and passenger trade, made several voyages, did not pay, was withdrawn and sold to parties in Bremen, and was added to the navy of the new German Confederation. She had a flat bottom with a concave floor. In several respects she differed from any vessel previously constructed. She was also the first commercial steamship constructed to be of use to the government naval service. She could be armed with two tiers of guns, had plenty of room in which to work them, and could carry coal enough for a voyage to Europe. Her first trip to Liverpool occupied thirteen days and consumed forty tons of coal daily,—five hundred and twenty tons. She was two hundred and fifty-six feet long, fifty feet broad, and thirty and a half feet deep.

1849.—The Law Line.—This at one time highly successful line of mail steamers was established by Law, Roberts & Co., under a government contract with A. G. Sloo, made in conformity with the law of Congress of March 2, 1847, for carrying the United States mails between New York and California and Oregon. The line owed its origin to the enterprise, intelligent policy, and business capacity of George Law, of New York, who at an early day in the history of California did much to hasten the introduction of civilization and comfort upon the shores of the Pacific, and to convey the countless thousands of immigrants to their new homes and bring back intelligence of their arrival.

The "Ohio" was the first vessel built for this line under the law of Congress in 1849. Her hull was strongly built and had a diagonal bracing of three-inch *round* iron extending the whole length of the vessel between the keelson and main-deck beams. The "Georgia," a sister vessel, was framed in the same manner, but was of different model. She exhibited in her model the first signal departure from the sail-packets that had been so celebrated. The general dimensions of these two steamers were,—

	"Ohio."	"Georgia."
Length on deck	248 feet.	255 feet.
Breadth of beam	45½ "	49 "
Depth of hold	24½ "	25½ "
Tonnage	2397 tons.	2695 tons.
Average draught	15½ feet.	17 feet.
Diameter of paddle-wheels	36 "	36 "

Their engines were of the side-lever variety and had double-balanced valves, the steam-valve being worked by one eccentric so adjusted as to cut off the steam at any part of the stroke, while the exhaust-valve, being worked by a separate eccentric, could be set to give any desired lead. Each steamer had two engines. Diameter of the cylinders, 90 inches; stroke of piston, 3 feet. There were four iron boilers in each,—two forward and two abaft the engines. Each boiler was 21½ feet long, 15 feet wide, and 14 feet high, with five rows of flues and four furnaces with grates 8 feet in length. The arrangement of the flues was different from any previously built. The average speed of these vessels in good weather was 12 knots.

The "ILLINOIS," the next vessel built for the line, was constructed under the immediate direction of George Law. Her length on deck was 267 feet 9 inches; length of keel, 255 feet; breadth of beam, 40 feet 3 inches; depth of hold to spar deck, 31 feet. She was fitted with two oscillating engines. The diameter of the cylinder was 85 inches; stroke of piston, 9 feet; diameter of paddle-wheels, 33 feet 6 inches; breadth of paddle-wheels, 10 feet 6 inches. She had four return tubular iron boilers, with two smoke-pipes, and was barquentine rigged. Her maximum speed was 13½ miles per hour. On one occasion she ran from Chagres to New York, one thousand nine hundred and eighty miles, in six days and sixteen hours, being an average or nearly twelve and a half miles per hour the whole voyage.

Besides these vessels the company chartered the "Falcon,"[15] which was chiefly employed in carrying the mail between Havana and New Orleans. Her length on deck was 206 feet; beam, 30½ feet; depth of hold, 21 feet; average draught, 12 feet; tonnage, 875 tons; average speed, 9 knots.

These steamers were all running on the line between Chagres and New York in 1853.

[15] The "Falcon," it will be recollected, received the engines of the "Iron Witch," the first iron Hudson River boat.

GEORGE H. PREBLE,
Rear-Admiral U.S.N.

(To be continued.)

THE ARMY AND THE MILITIA.

THE United States, with a population of some sixty-five millions, has an army of only about twenty-five thousand men,—while all the other great powers of the earth keep constantly on foot armies numbered by hundreds of thousands. The reasons why we need no larger a force in time of peace are,—

1. Our geographical situation,—separated by three thousand miles of stormy ocean from all the great military nations; a barrier by no means insurmountable, but placing any nation attacking us at a great disadvantage.

2. Our political isolation from the countries of Europe, growing out of our wise policy—established by Washington—of holding aloof from the affairs of other peoples, and, while cultivating friendly relations with all, avoiding entangling alliances with any.

3. The promulgation early in the century of the Monroe doctrine, by which those nations of Europe who were threatening to employ their armies, left idle by the fall of Napoleon, against the struggling republics of Spanish America were given to understand that no European power would be permitted to obtain a foothold on the Western continent which it did not then possess. To have allowed the monarchies of Europe to make conquests and acquire territory on this side of the Atlantic would almost inevitably have afforded occasion for collision with us; it would have drawn us into the circle of European interests, and obliged us to keep up armaments somewhat corresponding to theirs. The policy of Washington has kept us from mingling in the politics of Europe; the policy of Monroe has warned foreign nations off this continent; and both have made for peace.

4. The judicious course pursued by our government in 1856 in refusing to join France and England in the Ostend manifesto, abolishing privateering; whereby we gave notice to all nations having a maritime commerce to protect that in case of war we would cover the ocean with privateers,—"the militia of the seas,"—and utterly destroy their commerce. This made it the interest of the commercial classes of those countries to avoid war with us, and exerted and still exerts a powerful influence in favor of peace.

5. The comparatively limited field in which our regular army is

required and authorized to act as far as domestic affairs are concerned. If any disturbances take place in England, France, or Germany too formidable to be controlled by the civil authorities or police, a call is at once made on the regular army. Here, in a similar case, the call would have to be on the militia of the State in which the disturbance took place, which in almost every case is able to deal with the emergency; and it is only when requested by the Legislature of the State concerned (or by the executive when the legislature cannot be convened) that the President is authorized to employ the army of the United States or the militia of other States.

6. The habit of self-government,—and consequently of self-restraint,—and the general respect for law among our people, which in many cases makes the mere display of a handful of men in uniform (regular or militia, as the case may be), showing that the government, State or Federal, is determined to enforce the law, sufficient to effect its purpose.

For all these reasons, we need but a very small permanent military force. The purposes for which we need a small regular army are,—

1. To protect our Indian frontier; an important function in the past, but growing less so every year on account of the progress of settlement and of railroads at the West, and of the efforts for the education and civilization of the Indians.

2. To respond to infrequent calls upon it to enforce the laws of the United States in cases where a marshal's posse is insufficient, or to the still rarer calls to protect a State against domestic violence, when the President is called upon by the proper authorities of the State.

3. To garrison our seaboard and frontier fortifications.

4. And, most important of all, to form a nucleus for a large army and a seminary of officers in case of war.

Our army has been spoken of as a top-heavy organization, with an undue proportion of officers, nearly all graduated from the Military Academy at West Point, which, in turn, is declared an unnecessary institution. But these criticisms are not well founded. The truth is, we have just such an army as we need and desire; not large enough to be felt as a burden or regarded as a possible menace to liberty; it enjoys the hearty respect of our people, and is commanded by a body of officers unsurpassed in the world for knowledge of all branches of the military art. "No country in the world," said Colonel E. W. Morgan, a distinguished graduate of West Point, and superintendent of the Kentucky Military Institute many years ago, "no country in the world educates all its army officers as we do. Other nations have special schools for special classes of officers, such as artillery or engineers, but none of them educate all classes of officers." Our government, notwithstanding occasional adverse criticism, has stood by West

Point and by its traditional policy of keeping up a small force well officered, until we now, as in the past, have an army not large, but highly efficient, every lieutenant of which is fit to command a regiment in actual service, every captain a brigade, and every colonel an army corps.

In possible future wars, as in the past, our chief reliance must always be in the "mighty host" of volunteers who will always be ready to spring to arms at the first sound of war, as they did in 1861. But for the work of transforming that host into a disciplined and powerful army, organizing and serving in its various staff corps, and exercising important commands in it, the experienced educated officers of our regular army will be of a value that can hardly be overestimated. West Point and our present army system, which it makes possible and of which it forms a part, could have no better vindication than is presented by the experience of the late Civil War. It is only necessary to recall the roll of those who commanded independent armies or army corps therein,—Grant, McClellan, Sherman, Buell, Sheridan, Thomas, Rosecrans, Meade, Hancock, Hooker, and others,—to be reminded that, with hardly an exception, they were graduates of West Point and officers of the regular army. It was natural that a martial people, suddenly called to arms, conscious of their strength, but also of their inexperience, should seek for leaders army men of military education and experience; and they were not disappointed in the response. There is good reason to believe that in the event of war history in this respect would repeat itself.

For the reasons already given, it does not seem probable that we are in danger of war. And yet it would be unreasonable for us to expect to always escape the chances of foreign complication resulting in hostilities. All the nations of Europe are on a war footing,—armed not against us, it is true, but against each other. But in case of a general European war we would be extensive carriers and vendors to all the belligerents, which would give occasion for disputes as to the rights of neutrals. The great military and commercial nations of Europe, too, have extensive dealings with the nations of Central and South America, and have vast interests there, the protection of which might readily give rise to questions involving the maintenance of the Monroe doctrine. It is in view of this constant possibility of war that our navy is being reconstructed; that efforts are making for improving our coast defenses by the use of the most effective guns and strongest defensive armor, and that our most important foreign missions have each their military and naval *attachés* charged with keeping our military authorities *en rapport* with the progress of the modern art of war.

But the heaviest guns and best defenses are useless without men. For these, as already remarked, our chief reliance will be on our

volunteer troops. But it takes time to make soldiers out of the best of men,—time at least for them to learn the rudiments of drill and tactics, and to acquire those habits of discipline and obedience which give them that confidence in themselves and each other which causes them to stand and act together. No one who remembers the throngs of volunteers who crowded our camps of instruction at the outbreak of the Civil War—the best material in the world for soldiers, but wholly without military knowledge or discipline—can regard without apprehension the result of a collision of thoroughly disciplined troops with our hastily assembled levies. The only reason why our lack of discipline at the beginning of the late war was not disastrous to us was that the Confederates were equally unprepared with ourselves.

Under our system of maintaining a small regular force and depending mainly on volunteers, time for the latter to acquire military knowledge and steadiness is an essential element. But time is exactly the thing which an active enemy would not allow us. The Atlantic is not the obstacle to invasion which it used to be. The "ocean greyhounds" which have reduced the passage to less than six days are many of them built and operated under a subsidy authorizing their governments to convert them into transports in case of war, and, whether so authorized or not, the governments could readily take possession of them for that purpose; and a fleet of such vessels could bring one hundred thousand men to our shores within two weeks after a declaration of war. The operations of war under great commanders are very rapid. In less than two weeks Napoleon conquered Prussia. Prussia declared war against France on the 1st of October, 1806, and on the fourteenth day of the same month, by the battles of Jena and Auerstadt, fought on the same day, the military power of Prussia was destroyed, and eleven days later Napoleon entered Berlin. Of course, no such result would follow the loss of a battle or two by us at the beginning of a war, with our sixty-five millions of people, but such defeats might prove very disastrous to us and greatly increase the cost of the war in lives and treasure. To guard as far as possible against such dangers, and to bear the first brunt of a war, we need something more than a few thousand regular troops and a multitude of undisciplined levies. For this emergency we have a resource in the organized militia of the several States, of which we have an army of one hundred and twelve thousand men. These men are not regulars nor veterans, but they are very far from being raw levies. As to veterans, no nation in the world could in case of war show any considerable number of them, for they are made only by actual service (General Sir Garnet Wolseley to the contrary notwithstanding), and there has been no war in this country for more than twenty-eight years (except Indian hostilities, participated in only by our small regular army); nor have the European nations had wars of any moment since the

Franco-German conflict, which closed nearly twenty-three years ago. But the soldiers of a war which ended twenty-eight or twenty-three years ago are not, as a general thing, equal to the strain of a second war. If we should unfortunately be involved in a war, it would have to be fought mostly by men without practical experience in warfare, and our success would depend, especially at the outset, on the discipline of our force.

The term militia, as used in the Constitution, includes the entire arms-bearing population of the several States, able-bodied and of the military age, which is generally from eighteen to forty-five, although occasionally extended in great emergencies to embrace all ages from fifteen to sixty, as was done in the Confederate service towards the close of the Civil War. In the early history of the country, the laws of the different States will be found making provision for organizing and disciplining the whole body of militia. While population was sparse and hostilities chiefly with the Indians the plan answered very well, calling into the field a body of hardy frontiersmen, accustomed to the use of arms and inured to hardship and exposure. This system, with its old militia musters, was kept up until forty or fifty years ago,—about the time of the Mexican War,—but as population increased, it became impracticable to diffuse among the whole body of the people, by such means, an amount of military knowledge and discipline that would be of any use in actual service; and the States have long since abandoned this effort, and substituted a system under which the whole population subject to military duty is merely enumerated, and the real force is one of volunteer companies and regiments, variously known as National Guards, State Guards, or volunteer militia. This is the force which is relied on by the respective States to meet any emergency within their own limits, and it would also be the force first called into the field in case of a foreign or a civil war requiring the President to call out the militia,—in the language of the Constitution, "to suppress insurrection and repel invasion." These regiments are composed of the same kind of men as those who filled the armies of the civil war on both sides, and would undoubtedly give as good an account of themselves if occasion required. They are regularly enlisted,—generally for three or five years,—well armed, equipped, and uniformed, and are perhaps in all the States paid at least when on duty or when in camp. They are also provided with armories at the expense of the State or localities in which they are raised. Few of our people are aware what an effective army we have in these modest battalions, which are rarely seen on our streets, and are drilled at their armories, generally in the evening, that being the only time at the command of the officers and men, who are generally engaged in business. Information on the subject is buried in official reports of limited circulation, and does not meet the eye of the general reader. A few extracts from the reports of army officers

detailed by the War Department, at the request of the State authorities, to inspect the militia during the last few years will give an idea of the State of discipline of this important branch of the national power as seen by the most competent judges.

Brevet-Colonel A. C. M. Pennington, Major Fourth Artillery, writing in 1885 concerning the First Brigade, Massachusetts Volunteer Militia, says, "The *personnel* of all the commands is excellent. The officers are zealous and seem to be desirous of bringing the militia of the State up to a high standard. . . . I have met most of the officers personally, and have been much impressed with their earnestness and military bearing." Speaking of the cavalry, he says, "The cavalry, Troop F, impressed me favorably in every respect; it was well mounted and the men were good riders. . . . It is exceedingly well drilled in the school of the company, and in skirmishing, both mounted and dismounted." And speaking of dress-parade, he says, "These parades were as perfect as could be desired, and the steadiness of the men could not be excelled. I took occasion to ride in the rear of the line at every one of these parades, and I did not see a movement on the part of any man in the line. The ceremonies were excellently carried out and the manual of arms was remarkably well executed." Again, in his reports of inspection of the Second Brigade, Massachusetts Volunteer Militia, he says, "I had an opportunity of seeing the Ninth and Fifth Regiments march to the station in Boston and take the special train provided for them. They made a very fine appearance, and embarked with a precision and want of confusion that would have done credit to veteran troops. . . . The manual of arms was remarkably fine throughout the encampment. Battalion drills took place every morning and afternoon, the movements performed embracing all those enumerated in the tactics, and executed, even on the first day, with a precision that was astonishing, when we remember that the companies composing these regiments come together but twice a year for battalion drill. They are distributed in about sixty armories throughout the State. The skirmish drill by bugle call alone in the Ninth and Fifth calls for especial remark, the men responding to all calls promptly and executing every movement in a manner that could hardly be excelled."

Captain James M. Burns, Seventeenth United States Infantry, detailed for a similar purpose in 1890 in Ohio, says, in speaking of the First Infantry, "I inspected the seven companies of the First Infantry stationed at Cincinnati. During the day the armory was inspected, and found to be in perfect condition. Every part of it, from officers' parlors to the stables, was scrupulously clean. The books and records, as a rule, are correctly kept, and where inaccuracies were found they were pointed out to the responsible officers and need not be mentioned here in detail. At night there was a review, inspection drill, and dress

parade of the battalion, and the movements of these different manœuvres were as accurate as is usually made by regular troops. So far as I could observe, not an error was made. The arms, accoutrements, and clothing are in excellent condition." And speaking of the troops at Cleveland, he says of the First Troop of Cavalry, "It has seldom been my pleasure to see such a fine-looking body of men assembled together in one organization, or to witness such a perfect drill. Not a movement was made which was not in exact accordance with the tactics; in fact, in my judgment, nothing in a military drill can be more perfect than the drill of this troop. Both horse and rider apparently understood every command, and executed them in a perfect manner. The riding hall connected with the armory is in excellent shape, and of sufficient size to allow a troop of cavalry to manœuvre with ease and comfort." And speaking of the same troop in camp,—"There is no doubt in my mind but what this troop would render valuable service in time of need, but their great value in time of danger to the government would be as individuals organizing troops and regiments of volunteers and commanding them in the field. Each one is competent to do this." And of the artillery of the same place he says that they "presented a very fine appearance, and will doubtless render very efficient services should they be called on. Their drill was very fine in every respect; in fact, nothing too complimentary can be said of this organization." And of the infantry,—"The drill of the companies reminded me of the drill of some of the old veteran organizations at the close of the late war. I observed them very closely, and was unable to discover a single mistake either by officers or men. I was impressed by the fine soldierly appearance of these men." And of the whole National Guard of Ohio he says, in his report to the adjutant-general of the army, "From a careful calculation, I am able to report that three thousand effective men can be assembled in any city of the State inside of twelve hours, four thousand inside of sixteen hours, and the whole guard inside of twenty hours. The State is well supplied with tents, and the men with good knapsacks, haversacks, canteens, and fatigue uniforms, and excellent overcoats and blankets."

Similar extracts might be multiplied as to other States, showing a high state of discipline and efficiency in the National Guard, or organized volunteer militia of the United States, and that it is a formidable force. It exists in every State and Territory in the Union; from Maine to California, and from Washington to Florida; from New York with thirteen thousand five hundred men to Oklahoma Territory with one hundred and fifty-four. It should be fostered and dealt with by the States with no grudging hand, for it is a most important factor of the defense both of the State and Federal governments; and it is not the least of its merits that it is the cheapest military force ever

kept up, its cost being only from twenty to twenty-five dollars per man per year, even in the States making the most liberal expenditures for the purpose.

Under our dual system of government, we owe a double allegiance, —to the State and to the United States; and thus it results that the duties imposed on our National Guards or militia are of a twofold and somewhat different nature. As soldiers of the State, their duties are generally confined to short tours of duty against unorganized lawlessness, in which the qualities chiefly required of the soldier are firmness, discretion, and patience. But if called into the service of the United States, it would generally be at the outbreak of a great war, in which they would be called upon to sustain the fatigue of the weary march, the sleepless vigilance of the picket, and the conflict with highly disciplined troops, equipped with all the enginery of modern warfare.

Their preparation for service in this latter field of action—as a reserve in case of war—should therefore be as thorough as possible. Great advantages would be derived from the establishment of closer relations between the National Guard or organized militia and the regular army. A step in that direction has been taken in the detailing of officers of the army, at the request of the States, to be present at the annual encampments of the militia and at other times, and report on their efficiency. But the matter should be carried further and reduced to a system, and this could be done without the necessity of any legislation either by Congress or the State legislatures; merely by co-operation between the military authorities of the United States and those of the States respectively. There should be assigned to each of the twenty-five regiments of infantry of the regular army, as its reserve, a definitely designated part of the National Guard or volunteer militia, amounting in number approximately to one twenty-fifth part thereof,—as nearly as such assignments could be made with regard to contiguity of territory and to State lines, and without dividing existing regimental or company organizations; and such assignments should be made with the end in view that, in case of war and the consequent calling of the militia into the service of the United States, the regular regiment and the National Guard or militia regiments attached to it should be brigaded together, or, if thought best, formed into a provisional division.

As an officer holding the commission of the United States ranks all officers of the same grade holding State commissions, the colonel of the regular regiment would, on the mobilization of troops for war (in the absence of orders to the contrary), be the officer in command of the provisional brigade or division. And, as the proposed brigade or division would be composed of from one-fourth to one-sixth regular troops and be commanded by a regular army officer, it would possess

an element of professional knowledge and experience which would soon leaven the whole mass.

Let us suppose, for the sake of illustration, that the Volunteer Militia of Massachusetts (than which there is none better drilled in the United States) of six thousand one hundred and seventy-four men of all arms, infantry, cavalry, and artillery, be designated to form, with the First Regiment of regular infantry, a provisional division; that the militia of the rest of the New England States, numbering six thousand nine hundred and fifty-four men, with the Second Regiment of regular infantry, form another such division; that out of the State of New York, with its thirteen thousand five hundred National Guards, two such divisions be designated (to correspond to the two divisions into which the National Guard of the State of New York is divided for instruction at the camp at Peekskill, to which they are sent in alternate years), in connection with the Third and Fourth United States Infantry; and so on through all the States and Territories, provisional brigades and divisions of from three to seven thousand (approximately) being assigned to each regiment of regulars, according to circumstances.

Such assignments having been made, the colonels commanding the regiments of regulars so assigned should be charged with the duty of promoting the efficiency of their contingent future commands by every means in their power. The detail of such number of officers as may be desired by the several States should be left to them, to be made from their own regiments, and at least two officers should be kept constantly on duty in each provisional division or brigade, not only inspecting the troops from time to time, but ready to impart such instruction as may be desired,—just as officers have always been detailed as instructors at West Point. That the National Guards would gladly avail themselves of opportunities of professional instruction from West Point officers there can be no doubt. Hitherto the chief, if not the only, instruction attempted has been that incidental to the inspections performed by officers detailed by the War Department, at the request of the State authorities, and it has been of great value, illustrated as it is by the object lesson of what is involved in passing a satisfactory inspection. But this might with great advantage be supplemented by theoretical instruction at the armories. In the larger cities and towns, where from two to ten companies each are stationed, this instruction might take the form of lectures, with questions and answers, on such subjects as the articles of war, the more important parts of the army regulations, the proper care and cooking of rations in the field, on which the comfort and health of the men so greatly depend, the mode of fortifying a position in the field, and such other topics as would readily suggest themselves; the lectures to be open to the officers and non-commissioned officers and such members of the

guards as chose to attend. In smaller places, instruction might be less formal, while quite as effective. From the reports of these officers, made to the State and United States military authorities, not only would these authorities be kept constantly informed, as at present, as to the condition of these brigades and divisions, but by changing the detail from time to time the officers of the regular regiment would each in turn acquire a personal knowledge of the officers of the militia division with which they were connected, which would be of great value in determining as to the character and efficiency of each in actual service, and consequent fitness for higher command and for positions on the brigade or division staff. The aim should be to assimilate the two services,—regulars and militia,—and fit them to act together by bringing the latter to as high a state of discipline as possible. The best mode of doing this (short of actual service) would be by bringing the two together in encampments when practicable, for the acquirement of the military art is beyond all others influenced by example. This plan has been tried with very satisfactory results. A few years ago a battery of regular artillery (Battery B, Fourth Artillery), stationed at Fort Adams, near Newport, Rhode Island, was ordered to make a march of over two hundred miles for the purpose of encamping with a brigade of the Massachusetts Volunteer Militia, and remained, says Adjutant-General Dalton, of Massachusetts, in his official report, "during the period of the encampment, rendering the State valuable service by its example and instruction, its soldierly bearing, and perfect discipline." About the same time, a part of the artillery of the militia was drilled at Fort Warren, in Boston harbor, by permission of the commandant,—twelve companies at handling the heavy guns and nine companies at target firing in the harbor.

That the throwing of the militia of our seaboard States (or a great part of it) into the permanent fortifications once a year at least, during their summer encampment, and bringing them into contact with the regular troops of the garrison while receiving instructions in the use of heavy artillery, would be attended with good results cannot admit of a doubt.

President Cleveland in his last annual message expressed the hope that it will in the near future be practicable to concentrate the army in larger bodies and in fewer places than hitherto.

Such a disposition would greatly facilitate uniting a larger force of regulars and militia in the same camp. In the mean time, much can be done by the means herein indicated towards bringing the regulars and militia into closer relations, and the advantages of doing so are mutual and obvious. It would promote an *esprit de corps* among the National Guard and militia to find themselves a definite component part of a large army, certain to be the first force called into the field on the breaking out of a war, which could not fail to be beneficial to dis-

cipline; while to the regular army it would bring a definite force of reserves, with much of the training of regular troops and prepared to act with them efficiently.

I have made no reference to the cavalry and artillery, because the militia organizations of these arms are numerically so much below the usual proportion, especially the cavalry,—only one troop of cavalry in the State of New York, for instance, out of thirteen thousand five hundred men,—that it would be useless to speculate as to what disposition of them, and of the regular cavalry and artillery, the emergencies of active service might require. If attached, as they should be, in time of peace to the provisional brigade or division to which they belong by geographical situation, the advantages of inspection and instruction to the militia organizations would be the same whether they remained therein or were otherwise assigned.

The infantry of the regular army numbered, June 30, 1893, twelve thousand three hundred and ninety-seven men, adding to which the organized militia of the several States and Territories (mainly infantry) numbering one hundred and twelve thousand five hundred and ninety-seven, will give a force of twenty-five brigades or small divisions, averaging about five thousand each and aggregating one hundred and twenty-four thousand nine hundred and ninety-four; to which adding the regular cavalry, artillery, and staff corps, to the number of fifteen thousand one hundred and twenty-two, and we have an army of one hundred and forty thousand one hundred and sixteen, —nearly one-fifth regulars and the rest good militia,—ready to be called on in any emergency.

JOHN HENRY JAMES.

AMONG OUR CONTEMPORARIES.

General Dabney Maury's "Recollections of a Virginian" are full of interesting anecdotes, especially for those who recollect the Mexican War and the war of the Rebellion. A contemporary at West Point with McClellan, W. B. Franklin, William Farrar Smith, Hancock, Grant, "Stonewall" Jackson, and others who attained fame in the Civil War, he gives new and pleasing reminiscences of all of them. Every one has heard of "Stonewall" Jackson raising his hand, as if in supplication to the Deity, while in action and at other times. Deeply religious in nature as Jackson was, Maury gives another reason for his peculiar gesture, as follows: "At that time he was convinced that one of his legs was bigger than the other, and that one of his arms was likewise unduly heavy. He had acquired the habit of raising the heavy arm straight up, so that, as he said, the blood would run back into his body and lighten it. I believe he never after relinquished this peculiar practice, even upon the battle-field. He told us he had procured a year's furlough to try a professorship which had been offered him at the Virginia Military Institute. He remained there until the outbreak of the war between the States brought him before the world as the great Christian soldier of his time. His was the most remarkable character I have ever known. Cold and impassive of aspect, he was tenderly affectionate and full of fire. Filled with conscientious scruples, he was at times cruelly unjust. His arrests of Hill, Winder, and General Richard Garnett, three of the noblest officers in our service, were inexcusable, especially that of Garnett, whom he arrested for not charging Shield's victorious army with the bayonet when his ammunition failed. Jackson permitted him to remain in this painful position for many months, and when Garnett finally succeeded in obtaining a trial before a court martial he was acquitted upon Jackson's own testimony! The court yielded to Garnett's insistence that his treatment had been so unjustifiable as to make it only right that he should place on record the testimony for the defense. Poor Garnett! He fell in the front of his brigade at Gettysburg, loved and mourned by all who knew him." "The arrest of General Charles Winder was another act of unreasoning harshness, which General Dick Taylor, who had great influence with Jackson, induced him to revoke. Twice he arrested that noble soldier, A. P. Hill, whose name

was the last upon his own lips and those of Lee. General Lee was deeply pained by this inharmony between two of his ablest officers, and summoned them before him with a view of causing a reconciliation. After hearing their several statements, Lee, gravely walking to and fro, said, 'He who has been the most aggrieved can be the most magnanimous and make the first overtures of peace.' This wise verdict forever settled their differences. Jackson unhappily died at Chancellorsville, in the zenith of his great fame and in the grandest victory of Lee's army. Hill, more fortunate, fell by the last hostile shot at Petersburg, and both were spared the misery of the surrender and its cruel consequences."

We have all read accounts enough of the general blundering in the matter of supplies for the British forces in the Crimea, but the other day we came across one which seems new, if of the same nature as many others. Captain Woolward, of the R. M. Steamship Company, was employed in a transport during those operations, and, in his lately-published memoirs, says that when he first arrived at Balaclava it was several days before he was allowed to enter the harbor, as there was no berth for him. He had to keep in sight of the signal station all day, and at sunset run off and heave to for the night. At least a dozen other steamers were doing the same thing at the same time. "One of the vessels was laden with boots for the troops, and an officer of the commissariat was sent on board with orders to the master of her (we were not dignified by the name of captain) to carry him down at once to Constantinople, land him there, and return." On the way down this officer told the master of the vessel his errand was for the purpose of picking up all the boots he possibly could, as the troops were very much in need of them. The master of the vessel said, "My ship is full of boots, and I have been trying to get them landed for the last fortnight: let us go back."

"No, no," replied the officer, "my orders are to go to Constantinople, and your orders are to carry me there, and those orders must be carried out." So this officer obtained his holiday, and when the transport returned to Balaclava the soldiers got their boots, at least we may hope so.

Even in the most dreadful of disastrous battles there is more or less which appeals to the humorous side of human nature, and if the instances of individual courage, cowardice, eccentricity, and genuine wit which every conflict has produced had only been preserved they would form almost as long a story as the battles themselves. Thus the dinner-napkin episode of Braddock's surprise and defeat, as told by General Bradley Johnson in his lately published "General Wash-

ington," brings a grim smile to the lips of the reader, who is surfeited with the horrors of a disaster due to overweening pride and self-sufficiency. Alluding to the period of the action when Washington begged Braddock to allow him to bring up the provincial troops, who understood Indian fighting, the author says, "The trained soldier could not consent to veterans being protected by undrilled, half-armed, savagely clad countrymen, and said that his men should fight in line or not at all. The provincials had required no orders; the first shot told the whole tale to them; they were in the presence of the enemy in force, for half a dozen Indians alone would never fire at such a force. Killing was in order, and they proposed to be the killers and not killees, and do their part of the work. Without waiting for word or order they broke and took to the trees. Braddock was loud in damning their cowardice, but before one of his staff could ride up to Colonel Gage the provincials knew all about it and acted accordingly. They covered the rear of the army and the artillery and wagons. The French attack spread with the rapidity of fire in the dry grass. It ran along both sides of the English column and closed round the rear. The British stood in a road twelve feet wide, falling in their tracks without firing a shot in reply. Braddock sent an aid to the front to find out from Colonel Gage what was the matter.

"Struggling through a huddled column in a packed road is slow work for man and horse, and it took time to get forward, and as much to get back. The fire in front increased, and Braddock, all afire, spurred forward, assumed command of the Forty-eighth, and ordered it to form by platoons and charge the woods to the right and left. A platoon cannot be formed in a wood road twelve feet wide. Each flank will extend into the woods, and the line be pinioned as if its arms were tied.

"In the confusion the men fell by rank. The French account says that many officers were killed with their dinner napkins pinned to their breasts. This one incident lets in a clear beam of light over the tragedy of folly and incompetence. When it was once reported to 'Stonewall' Jackson that his adversary was marching up the valley attended by a herd of four thousand beef cattle, his reply was, 'Good! we can beat people who have to drive their rations on the hoof with them.' And he did. So the Frenchmen might have said, 'We can beat any soldiers who require dinner napkins on the eve of battle.' Napkins imply cooks; cooks require cooking utensils, wagons, all the vast impediments of a luxurious and overfed army, and prove lack of endurance. But they do not imply lack of courage. That the British breed has never shown, and the gamest, most gallant, most daring, most chivalrous class that ever lived is the English gentry, of which the officers of the army were then composed, and their American kin. On that field they showed themselves worthy of their blood,—they

showed every soldierly trait except sense. Braddock was on his horse in front of the column directing movements, shouting, gesticulating, swearing at the stupidity of his men, who would not form and would not charge. Said the men in the ranks, 'We'll fight men; we can't fight bushes,' and as the slaughter increased they became rattled. The line officers tried to lead squads into the bushes. Colonel Gage planted the colors of the two regiments in the road to form on. Still the men fell, and Braddock stormed. The line officers, 'with dinner napkins pinned to their breasts,' formed squads of officers by themselves and showed the way to death. The bush fighters in the rear never lost their self-possession for a moment,—they were at their accustomed work, and they went at it like a day's labor. Many of them knew Captain Washington personally and had served under him, and all of them knew him by reputation. Hurrying up and down the narrow road, when the commanding general rode to the front and took command there, his provincial staff officer naturally was sent back to direct the provincials and represent the general on that part of the field. As the French fire poured in on his flanks, Washington rushed Captain Waggoner's two Virginia companies by the right down into the ravine, faced to the left, and then charged straight up it, driving everything before him, and relieved that flank of the British column.

"In so doing the command got up in advance of Gage's column, where Braddock was swearing and the line officers dying. As they passed the English in the road, the latter, misled by the hunting-shirts and headgear of the Virginians, poured a volley into their rear and killed and wounded two-thirds of them. That ended all check to the French, and the rest of it was merely a *battue*, where the hunter shot his game from cover without risk and hardly with any excitement. The English, huddled up, fired into the groups in front of them,—fired in the air."

The accomplished correspondent, Adolphe Smith, in writing to the Philadelphia *Telegraph*, from Berlin, says, in speaking of the bridge which leads from the *platz* in front of the old Palace to Unter den Linden, "We pass before a series of statues calculated to inspire the love of military glory. There is Victory showing the use of weapons, and giving weapons to a warrior; and a third statue represents Minerva protecting a warrior and inciting him to conquest; all of which, I maintain, is a libel on a great divinity. Minerva, though armed and wearing a casque, was the divinity of wisdom, and I fail to see the wisdom of fighting and of conquests. Another statue gives us Victory raising a wounded warrior. All these statues stand out well on the parapet of the bridge, but I maintain that the moral they convey is of the worst kind. It is the moral taught by the First and the Second French Empires, and which culminated in Waterloo and Sedan; and,

unless the Germans desire a similar end to their glories, they had better teach a different lesson. On crossing this bridge towards the Linden we come upon another sinister reminder of the militarism that prevails in Germany. On the left is the Empress Frederick's palace and the old Opera House and the public library; opposite, the University and the Music Academy; but wedged in between these buildings, devoted to the arts, learning, and sciences, is the guard-house and three large cannon brought from the Mont Valérien, the principal fortress that defends Paris, and which the Germans occupied after the capitulation. One of these cannon is a huge monster called Valérie, and in front are some of the shells that used to be fired into the German trenches. Many a time have I heard this cannon roar forth its message of death in the stillness of the cold winter nights during that dreadful siege. Now it is quietly resting at Berlin, a wonder to nursemaids and little children, who come to gape at it when they go for an outing in the Unter den Linden. Of course the Germans have a perfect right to display their trophies of victory. When the old Emperor William, then only king of Prussia, went to visit the Paris Exposition of 1867, was he not obliged to cross the bridge named after the battle of Jena, where the power of Prussia had been crushed by the invading forces of Napoleon I.? But the world should be progressing, and these barbarous customs of exhibiting the trophies of war should die out. Otherwise, why not scalp our adversaries, and hang the scalps round as festoons to ornament our wigwams. When will all this blood-thirstiness and vain glory die out of the human race and character? The general aspect of Berlin does not indicate that this happy time is at hand."

In these notes we have heretofore given instances of extreme longevity in veteran sailors and soldiers; and we may now add another, which seems well authenticated, as the case has been investigated by the Board of Governors of the New Jersey Soldiers' Home. These gentlemen, in June last, gave a little *fête* to their charges in honor of the one hundredth anniversary of Henry Mueller, who participated in the proceedings, hale and hearty, and fully enjoying the occasion.

Mueller's military record is most remarkable. When he was fifteen years of age he was conscripted in his native Brunswick, and sent to join Napoleon's grand army on its march to Moscow. Surviving all the exposure of the campaign, and unwounded in the numerous battles through which he passed, he remained a soldier of France until the army was disbanded, after Waterloo. Returning to his native land he enlisted in the Hussars, seeing much active service in Hanover and in Schleswig-Holstein. Later on he came to the United States, enlisted again, and fought through the Seminole war,—again to escape, scot free, from the bullets of ambushed Indians and the fever-breeding

miasm of the Everglades. Then he served throughout the Mexican War. At the outbreak of the Great Rebellion he was a man old in years, but he enlisted again, and served continuously in the Union army until Lee's surrender. In all this campaigning and fighting, in the Old World and in the New, he never received so much as a scratch.

One hundred and sixteen years ago, on the 18th of June last, the British army which had occupied Philadelphia evacuated that city, marching down through the suburban district of Southwark to opposite Gloucester Point, where they were transported to the Jersey shore, for the march, by way of Haddonfield, to Sandy Hook, which march was to be rudely interrupted a little later by the battle of Monmouth. After all the fighting and exertion to capture and hold the then capital city of the United Provinces, it turned out unfortunately for the British forces in the end. Truly was it said—by Franklin, we think—that "General Howe had not captured Philadelphia, but Philadelphia had captured General Howe." When, in the month of May, General Sir Henry Clinton relieved him it was only to prepare for the evacuation which soon followed.

This year the Pennsylvania Society of the Sons of the Revolution made their annual trip by steamboat to several of the points below Philadelphia connected with the British occupation, and Fort Mercer at Red Bank. But few traces of this work remain, so serious have been the inroads made upon the bluff by parties in quest of building-sand. At one time the foundations of the monument were undermined, so that there was a danger of the structure toppling over into the river. This having been brought to the attention of government, the monument was removed to the government reservation of forty acres, just opposite Fort Mifflin, which is on the Pennsylvania side. This tract belonged to a family named Heritage, whose mansion was used as a hospital during the Revolution. To the southeast is the Whitall house, in which Donop died, "a victim," as he declared with his last words, "to his own ambition and the avarice of his sovereign."

On the main face of the monument, which is of Pennsylvania blue marble, is the inscription,—

"This Monument was erected the 22nd of October, 1829, to transmit to posterity the grateful remembrance of the patriotism and gallantry of Lieut: Col: Christopher Green, who, with 400 men, conquered the Hessian army of 2000 troops, then in the British service, at Red Bank, on the 22nd of October, 1777. Among the wounded were found their Commander, Count Donop, who died of his wounds, and whose body is interred near the spot where he fell."

The party afterward visited the other side of the river, where they landed at Fort Mifflin, a place now in a state of partial dilapidation,

and only in use as a naval magazine. The original fort upon "Mud Island" was built by Captain Montresor, of the British army, before the Revolution. By a coincidence, the same officer was chief of engineers to the British general when, some years afterwards, he was conducting operations against Fort Mifflin, as it had been called by the Americans. Howe's situation in Philadelphia was a very precarious one, even after full possession of the city was obtained, unless the works at Billingsport and Fort Mifflin could be reduced, and the obstructions in the river cleared away, so that the British fleet could come up to the city. The works at Billingsport were captured and destroyed on the 1st of October, but Fort Mifflin held out by desperate fighting against overwhelming forces until the middle of November. Many generals in Howe's position, after his fleet was in touch, would have made a winter campaign, which would have probably fatally damaged the American cause; but Howe was not of that stuff, fortunately, and preferred the delights of a gay town, only disturbed occasionally by Allan McLane and other rough riders, who stirred up his outposts, while Washington and his men were enduring the hardships of Valley Forge, and old Steuben was perfecting that drill and discipline which were to be displayed to full purpose at Monmouth Court-House during the next summer. But to return to Fort Mifflin. On a tablet over the arch of the sally-port is an inscription showing when it was rebuilt, as follows:

"Er. A.D. MDCCXCVIII,
"John Adams Pt. U. S.
"James M. Henry, Syr: of Warr,
"on the plan of
"Major Lewis Tousard."

We have lately come upon a book entitled "Ancient Ships," by Cecil Torr, M.A., and published by the Cambridge University Press, 1894, which has a wealth of notes, containing quotations from authorities, which, indeed, are as voluminous as the text. As the author states in his preface, "Ancient ships have already formed the subjects of dozens of books and pamphlets," but the author seems to have condensed all that can be authoritatively stated to about one hundred and forty pages, large octavo, with about forty authentic illustrations, by which he explains in a satisfactory manner many points which have been obscure to those who took any interest in the subject at all. Mr. Torr gives an index of the authorities consulted, showing very great industry as well as learning; indices of the Greek and Latin technical terms used in ship-building, and an index to the illustrations. On page 62 he says, "In the forepart of the war-ships everything was constructed with a view to ramming. The catheads were massive, and

stood out far enough to tear away the upper works of a hostile ship while the ram was piercing her below, for which purpose they occasionally were strengthened at the ends by timbers springing from the hull some way behind. And they must also have served in ramming to protect the oars from damage by the enemy." He then presents designs of Greek war-ships of about 300 B.C., showing this arrangement. "Here the catheads are on a level with the gunwale and the gangway, which both finish at this point, while the waling-pieces move onward to the stern. Right forward the keel and stem-post and lower pair of waling-pieces converge to hold the ram; and higher up the stem-post a smaller ram is fixed upon the junction of the upper pair of waling-pieces. In ships of more than three banks there were presumably an extra ram for every extra pair of waling-pieces; and here some rams were fixed upon false waling-pieces on a level with the catheads. All those auxiliary rams would extend the wound inflicted by the principal ram, and thus cut an enemy open from the gunwale to the water-line, while they would also protect the stem-post underneath them from being shattered by contact with her sides. The rams usually were made of bronze. On the Athenian three-bank ships the principal ram did not weigh more than three talents or thereabouts,—that is to say, one hundred and seventy pounds; so the metal could only have formed a sheathing round a core of timber. And thus the ram was often a treacherous weapon in warfare, inasmuch as it was slender enough to be wrenched off the ship in delivering its blow, and started her timbers as it broke away. As a rule it (the ram) had three teeth; so it looked like a trident when viewed from the side. These teeth are conspicuous in the Greek ship of about 300 B.C., but in the Greek ship of about 600 B.C., and also in the Phœnician ship of about 700 B.C., the ram has only a single tooth; and here the ram curves slightly upward, whereas the trident ram curves down, as though it was intended to heel an enemy over."

In Athenian ships of about 500 B.C., the ram assumed the shape of the boar's head; and this type was characteristic of Samian ships in the days of Polycrates, who reigned from 532 to 522 B.C. Ships of other states afterwards used the ram's head, and in later times, when the principal ram was a trident, the boar's head was retained for the smaller ram above. The author gives a drawing of one from a Leucadian ship of about 150 B.C.

"Before the introduction of the ram, animals had been carved upon the prow for figure-heads, as in the Egyptian war-ship of about 1000 B.C. And generally there was either a figure-head, or else a painting or relief on both bows; the subject corresponding to the name of the ship and serving to distinguish her from others." Mr. Torr gives figures of such paintings or reliefs, and the only figure-head of the period extant, drawn to scale. This was found at Actium,

and probably dates from the time of the battle. It is a warrior's bust, with helmet and cuirass, and quite artistic.

In the book notices of the *Army and Navy Gazette* the following had a place some little while ago, the comment showing that the circumstances connected with the "big fight" at Brandy Station were well known to the reviewer,—who was, possibly, Dr. Russell himself:

"'Die grosse Reiterschlacht bei Brandy Station, 9 July, 1863. Bearbeitet von Heros von Borcke und Justus Scheibert.' (Paul Kittel, Berlin.) This account of the famous cavalry fight at Brandy Station is written wholly from the Confederate point of view, and it must be confessed that the personalities of the authors are somewhat too dominant. Heros von Borcke, who fought in many actions of the war, and was seriously wounded at Middleburg, was chief of General Stuart's staff, upon which Justus Scheibert, though he went out as representative of Prussia, a neutral state, accepted a post as captain of cavalry. These gentlemen have since devoted some attention to extolling their achievements, and are certainly very vigorous and interesting writers. The former is the author of 'Zwei Jahre im Sattel' and of 'Mit Prinz Friedrich Karl.' It will be remembered that General Pleasanton, suddenly crossing the Rappahannock in two columns, attacked Stuart by surprise, on both fronts, at Brandy Station. That the Confederates fought well and efficiently there can be no doubt, but Colonel von Borcke and his colleague picture the fight as a complete victory for them. It is, however, well known that the object of the Union forces was substantially gained, since the Army of the Potomac marched undisturbed, and the subsequent weakness of Stuart's cavalry gave Gregg the advantage and seriously crippled Lee. This being understood, the book becomes very interesting. It gives biographical sketches, accompanied by portraits, of the Confederate cavalry leaders, describes the characteristics of the American cavalry, and furnishes a detailed account of the battle, with several plans, besides including General Stuart's instructions for cavalry, which have not before been printed in Germany. The pictures of the fight, mostly imaginary, of course, from the pencil of Herr C. Sellmer, are very spirited."

The little touches about the captain who went out as a representative of a neutral state and the purely imaginary pictures are good. The "complete victory" at Brandy Station is quite as imaginative as the pictures, of course. But that is the way that much history is written,—*i.e.*, from the writer's point of view.

A late number of the *Nautical Magazine* contains an article entitled "Notes on Lightning and Compasses," which quotes several

instances in which iron vessels—contrary to the generally received opinion—have been struck by lightning, often impairing the efficiency of their compasses. But the writer goes on to show that other things, little suspected, may seriously affect a ship's compass.

"A very serious example of an intermittent influence, a kind of perturbation by Venus, is related by Saxby. In 1858, a large steamship of the Cunard line was forty miles out of her reckoning, and the ship, a valuable cargo, and the lives of crew and passengers at great risk. Suspicion fell upon her compass, and on inquiry proved that a lady passenger wearing large hoop-skirts was wont to seat herself near the binnacle, and the steel hoops of her ample crinoline had affected the compass indications. This seems scarcely credible, yet a similar story is now running through the American papers. Quite recently, on one of the trips of the steel steamer 'Castalia' down Lake Huron, the second mate found that the compass would swing three or four points to either hand at intervals. So erratic did the needle become that a course could not be steered. Captain Allen was called, and found on entering the pilot-house two ladies seated there. He inquired if they wore steel corsets, and was answered in the affirmative. Further questioning elicited the information that the ladies had paid a visit to the engine-room and inspected the dynamo which supplied the electric lights of the steamer. The fair disturbers of the steamer's peace and safety were requested to retire, and after they had gone 'that compass got right down to staid business again, and showed the man at the wheel the way with its usual precision.' It is hardly necessary to explain that the dynamo had magnetized the steel corsets worn by the ladies, and that thus the corsets became responsible for the crazy race the needle of the compass ran as the wearers moved to and fro in the pilot-house. If not true, this is certainly very well told. The *Marine Journal*, of New York, a paper run by Captain Samuels, who commanded the clipper-ship 'Dreadnaught' during her record, North Atlantic passages, is responsible for the following information. The steamer 'Susan E. Peck' was wrecked last year, on a clear day, while attempting to make a straight forty-mile stretch on Lake Superior. Since then it has been discovered that the casualty was due to the new artificial leg of the pilot, which contained considerable steel, and caused the needle to point untruthfully. A ruptured helmsman, wearing a truss, has been blamed for troubling the compass."

E. SHIPPEN.

NAVAL AND MILITARY NOTES.

NOTES AND DATA ON NAVAL AND MILITARY MATÉRIEL AND ALLIED SUBJECTS.

It is the intention to collect and publish in this department of the "United Service" all information obtainable from current publications and other available sources concerning ships, guns, armor, explosives, small-arms, military and maritime affairs, and kindred subjects. As the data are derived largely from unofficial sources, strict accuracy cannot be expected; but all reports will be carefully examined and compared with others on the same subject, and it is hoped, by this means, to attain fairly correct results. Erratum notices will be published whenever errors are discovered in data previously given. As the development of the present plans for collecting information progresses, it is hoped to secure fuller and more authentic reports.

ABBREVIATIONS USED IN THE NOTES.

b.l. = *breech-loading guns of ordinary (not rapid-fire) type.*
cm. = *centimetre.*
f.a.m.l. = *fore and aft midship line.*
I.H.P. = *indicated horse-power.*
l.w.l. = *load water-line.*
m.g. = *machine gun.*
mm. = *millimetre.*
pr. = *pounder (as 6-pr.).*
r.c. = *revolving cannon.*
r.f. = *rapid-fire.*
r.f.g. = *rapid-fire gun.*

WAR-SHIPS AND TORPEDO-BOATS.

Great Britain.

NEW SHIPBUILDING PROGRAMME.—The programme of new construction for the British navy, which was published some time since, provides for a distribution of the work over five years, beginning with the current fiscal year and ending March 31, 1899. The whole of the scheme is not definitely settled, but is said to contemplate the production of 110 ships of all classes. Three years and a half are allowed for the construction of battle-ships, two and a half for first-class cruisers, two for second-class cruisers, and twelve months for torpedo-boat destroyers; but these times will probably be exceeded, unless future allotments of money are more generous than those given in the present budget. In the fiscal year 1894–95 it is proposed to commence seven battle-ships of the first-class of the same general type and size as the *Magnificent* and *Majestic*; six second-class cruisers of the *Talbot* type, but slightly larger; and two twin-screw sloops, specially adapted for service on the China station, and therefore, presumably, of light draught. Battle-ships Nos. 2 and 4 will be built at Chatham; Nos. 1 and 5, at Portsmouth; No. 3, at Pembroke; and Nos. 6 and 7 by contract. The amounts allotted for the construction of the new battle-ships are as follows: No. 1, 1893–94, £21,868; 1894–95, £116,660. No. 2, 1893–94, £21,560; 1894–95, £139,270. No. 3, 1893–94, £21,260; 1894–95, £130,403. No. 4, 1894–95, £27,639. No. 5, 1894–95, £36,919. No. 6 (contract), 1894–95, £169,404. No. 7 (contract), 1894–95, £166,207. The sums expended and proposed for the battle-ships building are: *Magnificent*, 1893–94, £66,260; 1894–95, £447,360. *Majestic*, 1893–94, £61,261; 1894–95, £456,148. *Renown*, 1892–93, £13,983; 1893–94, £192,686; 1894–95, £283,704. It is anticipated that the *Renown* will be

finished in 1895–96, the *Majestic* and *Magnificent* in 1896–97, five new battle-ships in 1897–98, and five more in 1898–99, of which latter three will be commenced next year,—one at Pembroke and two by contract. A design for a smaller battle-ship is being prepared, but it is not definitely known that the vessel will be built. It will have neither turrets nor barbettes, but will be completely armored on the broadside, and carry its guns in casemates. Four new first-class cruisers are contemplated, and they will all be built by contract in private yards. Two will be laid down in 1894–95 and two in 1895–96, and they will be finished in 1897–98 and 1898–99 respectively. The *Powerful* and *Terrible* are to be ready for service in 1896–97. Of the second-class cruisers the *Talbot*, *Minerva*, and *Eclipse* will be completed in 1895–96; six laid down this year, in 1895–96; eight laid down next year, in 1896–97; and ten laid down in 1896–97, in 1898–99, making twenty-seven in all. The six laid down this year differ somewhat in dimensions from the *Talbot* class, and a brief description of them will be found below. The remainder of the vessels so far designed are torpedo-boat destroyers, and if those already constructed prove successful in the coming manœuvres it is intended to build (including those already commenced or completed) four for each battle-ship in the Mediterranean and Channel squadrons, or sixty-four in all. Forty-two are now in hand, and work on the remaining twenty-two will be commenced during the next two years. A design for a third-class cruiser, an improved *Bellona*, is also being prepared, and, if approved, some of this class will be put in hand in 1896–97, and finished in less than the two years which remain of the period. During 1894–95 the *personnel* of the navy will be increased by 6761, comprising 193 commissioned officers, 2553 seaman class, 100 artisans, 2805 engineer's force, 210 miscellaneous ratings, 400 boys, and 500 marines. Of the 193 officers, 57 are additional Royal Naval reserve officers who are to be added to the number already serving with the fleet. The above will give a total force of officers and men of 83,400, marines 15,500. The programme also includes additional defensive works at Portland, Portsmouth, Devonport, and Southampton Water, especially designed to repel torpedo attacks; the extension of the mole at Gibraltar to 3700 feet (including the work in progress, it is now 2100 feet); the immediate commencement of work on a graving dock at Gibraltar; and three new docks and a coaling jetty at Keyham. The total amount of the estimates for 1894–95 is £17,366,100, or £3,126,000 more than the vote for 1893–94.

THE NEW BATTLE-SHIPS: DESCRIPTION: CONTRACTS AWARDED.—The contracts for battle-ships 6 and 7, which are to be built in private yards, have been awarded, one each, to J. & G. Thomson, Clydebank, and Laird Bros., Birkenhead, who will also construct the engines. The engines for the five building in government yards will also be built by contract,—one (No. 1) by Humphreys, Tennant & Co., one by Harland & Woolf, and one by Hawthorn, Leslie & Co.; the engine contracts for the other two have not yet been given out, as very little work will be done on the hulls during the next year. The new ships are of the same general type as the *Magnificent* and *Majestic*, and, like them, were designed by Chief-Constructor White. They are 390 feet long on the water-line, 75 feet beam, and have a mean load draught of 27 feet 6 inches, with 900 tons of coal in the bunkers, when the displacement is 14,900 tons. The weight of the hull is 10,180 tons, and the broadside will be covered from below the water-line to the upper deck with Harvey armor nine inches thick, the depth extending about fifteen feet. The armament consists of four 12-inch wire-wound, breech-loading guns, mounted in pairs in barbettes on the midship-line forward and aft; the barbette plates are of Harvey armor fourteen inches thick. The remainder of the battery consists of twelve 6-inch and twenty-four smaller rapid-fire guns. The machinery is designed to develop under natural draft 10,000 I. H. P., giving a speed of 16.5 knots; and under forced draft 12,000 I. H. P., giving a speed of 17.5 knots.

THE NEW SECOND-CLASS CRUISERS.—Arrangements are being made at Devonport for laying down one of the six of this class. The dimensions are: Length on the water-line, 370 feet; beam, 58 feet; displacement at load draught, 6000 tons. It will be fitted with two military masts, each carrying a top containing rapid-fire guns, and the crews of them will be protected by an armored shield sufficiently thick to resist machine-gun projectiles. The estimated cost is £300,000. The amount to be expended on the six vessels of the class during the present fiscal year is £226,551.

THE NEW STATION GUNBOATS: DIMENSIONS, BATTERY, ETC.—These vessels, intended for special service on the China station, are reported to be of the following dimensions: Length on the water-line, 185 feet; beam, 32 feet 9 inches; draught 11 feet 4 inches; displacement, 510 (?) tons. The horse-power is 1050; coal-supply, 160 tons; battery, six 4-inch and four 3-pounder rapid-fire guns. The amount to be expended on the two vessels of this class during the present fiscal year is £38,632.

"TALBOT," "MINERVA," "ECLIPSE": DESCRIPTION; CHANGES IN DESIGN.—These vessels have been partially described in previous numbers. The following is derived from the latest and most trustworthy information. The dimensions are: Length on the water-line, 350 feet; beam, 53 feet; mean draught, 20 feet 6 inches; displacement, 5600 tons. The engines are twin-screw, vertical, triple-expansion, developing 9600 I. H. P. with forced draft, and 8000 I. H. P. with natural draft. The corresponding anticipated speeds are 19.85 and 18 knots. The coal-supply at load draught is 550 tons. The battery is as follows: Five 6-inch, six 4.7-inch, eight 12-pounder, and one 3-pounder rapid-fire guns; four Maxim machine-guns and one light piece. Three (or five?) 18-inch torpedo-tubes, of which two are submerged. As originally designed, none of the guns of the battery were to be mounted in sponsons, but the present plan of placing the battery is as follows: One 6-inch on the centre-line forward; one 6-inch on each side of the waist in sponsons; the remaining two are on deck aft, one each side (but not in sponsons); the 4.7-inch guns are arranged three each side (not in sponsons) on the upper deck. Two 12-pounders are mounted on the forecastle, one each side; two aft, one each side; and four on the broadside between the 4.7-inch guns. The *Talbot* is building at Devonport, the *Minerva* at Chatham, and the *Eclipse* at Portsmouth.

"ASTRÆA," "BONAVENTURE," "CAMBRIAN," "HERMIONE," "FOX," "FLORA," "FORTE," "CHARYBDIS": SPONSONS ADDED.—These ships are all of the 4360-ton class. The Admiralty has ordered that sponsons shall be fitted in them for the forward and after pairs of 4.7-inch guns. The guns of this calibre were all mounted in broadside on the upper deck, and the maximum train was 60 degrees forward and abaft the beam. The forward and after pairs will now be able to fire directly ahead and astern respectively. The cost of alteration will be about £2000 for each ship.

TORPEDO-BOATS NOS. 91 and 93: LAUNCH.—These two boats were built by J. I. Thorneycroft & Co., Chiswick. No. 91 was launched March 5, 1894, and No. 92 a few days later. They are fitted with four-cylinder, triple-expansion engines, driving a single screw, steam being furnished by two Thorneycroft water-tube boilers, the whole designed to develop sufficient power to drive the boat at a speed of 23½ knots (guaranteed) on a continuous three-hour trial. The armament consists of three 3-pounder guns and three torpedo-tubes. The dimensions are: Length, 140 feet; beam, 15 feet 6 inches; draught, 7 feet 4 inches; displacement, 130 tons.

"FERVENT," "ZEPHYR," "SWORDFISH," "SKATE," "STARFISH," "STURGEON," "SUNFISH," "JANUS," "PORCUPINE," "LIGHTNING," "ROCKET," "SHARK," "SURLY," "CONFLICT," "TEAZER," "WIZARD": BOILERS FOR.—The boilers for *Janus*, *Lightning*, *Porcupine*, *Rocket*, *Shark*, and *Surly* are to be furnished by Normand, of Havre, and of the water-tube type; all the others

will have water-tube boilers except the *Fervent* and *Zephyr*, bulding at Paisley, which will have locomotive boilers; the *Conflict*, *Teazer*, and *Wizard* will have J. S. White's patent boilers; the *Swordfish*, Babcock & Wilcox's; and the *Skate*, *Starfish*, *Sturgeon*, and *Sunfish*, Blechynden boilers. For the builders of the above, see NOTES of last month.

About the middle of July the torpedo-destroyer *Daring* was given her final speed trials, with most successful results. At the beginning of the trial the draught forward was 5 feet 7¼ inches; aft, 6 feet 11¼ inches; and the displacement was about 240 tons. She was thus considerably under her full-load displacement.

Six consecutive runs were made over the measured mile, the mean of the speeds with the tide being 29.065 knots, and against the tide 27.399 knots. The mean of these means was 28.232 knots.

A remarkable feature of the runs was the regularity of the working of the engines, the revolutions varying only between 379.8 and 395.1 for either engine, on any of the six runs, and between the two engines on one run the greatest difference was 2.2 revolutions. The steam pressure was 190 pounds for the first run, 198 for the fifth run, and 200 pounds for all the others.

The boilers have a heating surface of 7890 square feet, with a grate area of 189, and generated 4735 I. H. P. The air pressure was 3.15 inches.

It is likely that this trial gives a fair idea of the speed which this vessel is capable of developing, since the influence of the tide was largely corrected by the quick successive six runs with and against the tide, but the element of uncertainty must always rest on a speed attained under such conditions, as no corrections for tide are attempted, and it may vary within wide limits during the run.

It is a matter of surprise that the English still cling to antiquated methods of trying ships; we have long since given up the measured mile, and runs with and against the tide without tidal correction.

The English naval manœuvres this year, which started out full of promise and intended to last ten days, were suspended after but three days' hostilities.

The hostilities commenced August 3, at 9 P.M., and by 3 P.M. on the 5th of August the war had practically terminated. There were four fleets, A, B, C, and D, the first two, or Red, under Admiral Fitzroy, and the last two, or Blue fleet, under Admiral Seymour.

The manœuvres this year were devised to reproduce what would likely result in the event of sudden war between England and France, and the bases of operations for each separate fleet were so chosen that the A and B fleets represented the English Channel and Mediterranean fleets, while the C and D fleets, under Admiral Seymour, represented the Toulon division of the French fleet and the Northern squadron.

The Irish Sea was the scene of the operations, and the operations were quickly begun by the C and D fleets combining and falling upon the B fleet, and later upon the A fleet, both of which were in succession captured or destroyed. The victory seems to have been due to the rapidity with which the Blue admiral acted in concentrating his force and falling upon the Red fleets in detail, and possibly partly to the slowness, comparatively speaking, of the Red admiral.

The result is much taken to heart by the English, as it points a victory for France in the event of war with that country, and the papers are drawing conclusions from the manœuvres,—principally that the channel squadron should be strongly reinforced.

LAUNCH OF THE "ECLIPSE."

This vessel, the first of the new naval programme, was successfully launched July 19, seven months after her keel was laid. She is 5600 tons displacement, and an improvement on the *Astræa* type. The engines of the vessel are designed to develop 9600 H. P. at forced draft, and 8000 H. P. without forced draft. One thousand tons of coal will be carried.

The dimensions are as follows: Length, 350 feet; beam, 53½ feet; draught forward, 19½ feet; aft, 21½ feet. She will

be sheathed with teak and coppered. Speed, 19.5 knots.

The armament will be five 6-inch Q. F. guns, and six 4.7-inch Q. F. guns, together with eight 12-pounder Q. F. guns, one 3-pounder Hotchkiss, and four .45-inch Maxims. Three torpedo tubes will be fitted, and ten 18-inch torpedoes carried. The complement of officers and men will be 436.

United States.

"COLUMBIA" TRIALS.—The following details of the trials of the *Columbia* are derived from the article by Passed-Assistant-Engineer Carter in the *Journal of the American Society of Naval Engineers*. The *Columbia* sailed from Philadelphia on November 11, 1893, for Boston, making the run from the light-ship off Cape Henlopen to Minot's Ledge, a distance of 407.4 knots, in 21 hours 52 minutes, or at the rate of 18.63 knots per hour. All the main boilers and the three engines were used. The engines averaged 112 revolutions, the average steam-pressure was 125 pounds, and the horse-power about 12,000. The mean draught on leaving Cape Henlopen was 23 feet 10 inches, and on arrival in Boston 22 feet 9 inches. On November 14 the ship was run over the trial-course, with all boilers and machinery in operation, under natural draft. The average speed was 20.75 knots. The official trial took place on November 18. The length of the course was 43.968 knots, extending from Cape Ann, Mass., to Cape Porpoise, Me. The course was accurately marked by a line of buoys, and a vessel was anchored close to each buoy as a marker and for taking tidal observations. The *Columbia* ran over the course from Cape Ann northward, and, after making a wide, sweeping turn, without slowing the engines, returned over the same course. The time on the course during the northerly run was 1 hour, 55 minutes, 6.1 seconds; mean speed, 22.92 knots. The time on the course during the southerly run was 1 hour, 56 minutes, 14.4 seconds; mean speed, 22.70 knots. The mean apparent speed for both runs was, therefore, 22.81 knots. The tidal correction reduced this .01 knot, giving the true speed as 22.8 knots. The patent logs gave a mean result of 24.34 knots, though they were supposed to be most carefully adjusted.

Twenty officers of the engineer corps of the navy were on board to watch the performance of the boilers and engines and to take indicator cards and other data. The operation of the machinery was satisfactory in all respects, except that one of the cross-head journals heated during the first part of the trial and irregularities of working were caused by occasional foaming of the boilers on the run south. Water was carried over into the cylinders of the port and centre engines at 12.35 and again at 12.50 P.M., causing a slowing of these engines, particularly of the former. Indicator cards were taken simultaneously on all cylinders at the beginning and end of each run, as the vessel crossed the line, and at every intermediate half hour.

TRIAL DATA.

Draught on trial, forward	21 ft. 3 in.
Draught on trial, aft	23 ft. 8 in.
Displacement on trial	7,350 tons.
Area of immersed midship section	1,120 sq. ft.
Wetted surface (calculated)	27,590 sq. ft.

	Port.	Centre.	Star-board.
Slip of screws, per cent.	19.13	15.85	19.82
Revolutions	132.9	127.68	134.0
Steam (at boilers 147.2 lbs.) at engines	145.5	144.0	145.0
Vacuum in condenser	25.6	25.0	25.1
Opening of throttle	wide	wide	wide
Temperature of fire-rooms, 105.7 F.			
Air-pressure in inches of water in fire-rooms, 0.73.			
I. H. P. of main engines	5,559.67	5,825.60	6,605.84
I. H. P. of main engines and air- and circulating-pumps	5,590.04	5,850.57	6,636.68
I. H. P. of all auxiliaries in use,			518.13
Total I. H. P. of all machinery in use			18,509.24

The condition of the machinery at the end of the trial was such that the trial could at once have been repeated and probably with better results. Subsequent examination showed the boilers and engines to be in excellent condition. Neither engines nor boilers were pushed to their utmost capacity. The air-press

ure in the fire-rooms was very moderate; with a slightly greater pressure, which would have given steam at the maximum boiler-presssure of 160 pounds, the horse-power would have been greatly exceeded. The great excess of power developed by the starboard-engine was due to carrying over water into the cylinders of the other two during certain parts of the trial and a resulting slowing down.

"MARBLEHEAD" TRIAL.—The details of the trial are from the article by Passed-Assistant-Engineer C. A. Carr in the *Journal of the American Society of Naval Engineers*. The official trial took place December 7, 1893, and consisted of one run each way over a course 36 miles long on Long Island Sound between Saybrook Point and Stratford Shoal Light. The depth of water on the course was about 17 fathoms. All main and auxiliary machinery worked most satisfactory in all respects. The coal used was hand-picked Pocahontas, and bagged so that a reliable estimate was obtained of the amount used during the trial. Indicator cards were taken every half hour from the main engines and once an hour from the circulating pumps. Cards of the other auxiliary machinery were taken after the conclusion of the trial under conditions approximating as closely as possible those of the trial. The safety-valves of the forward boilers were blowing constantly during the trial, and at times very strongly, while those of the after boilers were blowing moderately at intervals.

TRIAL DATA.

Draught (mean) during trial, forward	13 ft. 3¾ in.
Draught (mean) during trial, aft	15 ft. 5¾ in.
Displacement corresponding to above	2,054 tons.
Area immersed midship section	464 sq. ft.
Wetted surface	11,196 sq. ft.
Average speed	18.44 knots.
Slip (mean of both screws)	12.08 per cent.

	Starboard.	Port.
Steam at boilers	164.5	164.5
Steam at engines	163.7	160
Vacuum in condensers	26.2	25.9
Throttle opening	wide	wide
Revolutions of main engines	178.98	173.38
Horse-power indicated, main engines	2,655.86	2,646.79

Collective horse-power indicated, main engines	5,302.65
Collective horse-power indicated, after applying corrections	4,863.30
Collective I. H. P. of all main and auxiliary engines (uncorrected)	5,450.65
Air-pressure (in inches of water) in ash-pits	1.08
Air-pressure (in inches of water) in furnace fronts	0.88
Pounds of coal per I. H. P. per hour, all machinery	2.88

"OLYMPIA" TRIAL.—The official trial of the *Olympia* was made on December 15, 1893, in the Santa Barbara Channel, over a course 42.98 knots long. One run was made each way, and the following are the mean results:

Speed, in knots	21.686
Revolutions per minute	139.22
Steam-pressure in boilers, pounds	166.5
Vacuum, in inches	25.2
Air-pressure, in inches of water	2.04
I. H. P. of main engines, air-, and circulating-pumps	17,035.0
Mean draught, feet and inches	20 8.5
Displacement on trial, tons	5,570

"MONTGOMERY" TRIAL.—The official trial took place in Long Island Sound on January 19, 1894, and was very satisfactory in all respects. The speed attained considerably exceeded that of the other two ships of the class,—the *Detroit* and *Marblehead*. The mean results of the trial were as follows:

Speed, in knots	19.056
Revolutions per minute	180.27
Steam-pressure in boilers, in pounds	165.0
Vacuum, in inches	26.0
Air-pressure in ash-pits, in inches of water	1.4
I. H. P. of main engines, air-, and circulating-pumps	5,527.0
Mean draught on trial, in feet and inches	14 0¼
Displacement, in tons	2,091

The contractor's trial of the *Indiana* has taken place. Under natural draft she made an average on two different runs of 14.02 knots and 14.12 knots. Under ½-inch air-pressure she made an average of 15 knots. The last two runs were made with an air-pressure of 1 inch, when the ship made an average of 15.6 knots with scarcely any vibration.

An interesting test of the 6-inch curved nickel-steel plate made by the Carnegie Company was made April 24.

This plate had already been attacked by four 6-inch A. P. shells and an 8-inch A. P. shell.

The plate was without backing, but was blocked out from the structure about 6 feet by oak blocks 6 feet apart, leaving an arch 6½ feet long, supported only at the ends, as the object of attack.

Plate distance, 321 feet from muzzle of gun.

Round 1.—Charge, 43 pounds; striking velocity, 2000 f. s.; striking energy, 2776 foot-tons. A 6-inch Carpenter A. P. shell weighing 100 pounds was used. It struck the plate 24 inches to right of left support of arch, 67 inches from left edge, and 30 inches from bottom, penetrated plate and broke up, about 35 pounds of shell in fragments getting through. The impact was 10½ inches in diameter, with diameter of hole 6 inches, and interior rough and cut up by pieces of shell. An old crack which extended at first from 8-inch impact to within 3 feet of the impact of this round, opened out to within 6 inches of hole.

Round 2.—Charge, 36.1 pounds; striking velocity, 1800 f. s.; striking energy, 2249 foot-tons. Carpenter A. P. shell weighing 100 pounds of normal dimensions, and hardened as far as lower edge of bourrelet, struck plate 10 inches to right of left support, 51 inches from left edge, 22 inches from top, and 18 inches from former impact. Projectile broke up, head welding into plate; penetration, 4 inches.

Plate cracked from top to impact, from impact downward and to left, from impact of this round to that of former round, while the old crack from 8-inch impact extended on through last impact and about 18 inches beyond it. Shell broke up into a large number of pieces, flying to considerable distances.

It had been thought that an armor-plate without backing and supported only at the ends would, on being penetrated, crack very badly owing to the vibration set up, but this test showed that the plate had not very much less resisting power than when backed. The difference was very appreciable, but the results of this test were important, as many armor-plates in turrets, etc., are without backing.

This same plate, whose test has just been told, was again attacked on April 10 by an 8-inch A. P. shell.

Distance of gun to plate, 320 feet; gun, 8-inch B. L. R.

Charge, 62.7 pounds; striking velocity, 1472 f. s.; striking energy, 3754 foot-tons; ratio of energy as compared with that just necessary to penetrate wrought iron of same thickness, 4.3; projectile, Carpenter 8-inch A. P. shell, hardened to 1 inch below bourrelet, of normal weight and dimensions, struck the plate and nearly penetrated, the point being about 8 inches from the face of the plate, and hence not quite through the back bulge, which was 6.5 inches high and about 36 inches in diameter.

A through crack was developed by this shot in the plate on the left side, another through crack from the top near impact downwards, and a fine crack to the right of impact about 2 inches long. The plate by the previous four rounds had, of course, been much weakened.

On the 2d of April a ballistic test was made of a 6-inch curved Harveyized nickel-steel plate made by the Carnegie Steel Company.

The plate was 21 feet 8 inches long, 5 feet 4 inches wide, and 6 inches thick. It was secured to an oak backing 48 inches thick in the middle, 24 inches thick at the edges, by 21 2½-inch armor bolts, the ends of the plate projecting 14 inches beyond the backing.

Gun used was a 40-calibre 6-inch B. L. R.

Distance between gun and plate, 320 feet.

Round 1.—Charge, 25.1 pounds; striking velocity, 1472 f. s.; striking energy, 1504 foot-tons; ratio of energy to that required to just penetrated wrought iron of same thickness, 2.3.

Projectile, 6-inch Carpenter A. P. shell, hardened as far as the middle of bourrelet, of normal weight and dimensions. The projectile struck the plate 54 inches from left edge, and 19 inches from top, and smashed on the face of the plate, the point welding in the base and body, much broken up, delivered in front of target. The penetration was about 2 inches, the plate being uncracked.

Round 2.—Charge, 30.7 pounds; striking velocity. 1659 f. s.; striking energy, 1910 foot-tons; ratio compared with that just necessary to penetrate wrought iron of same thickness, 2.9. Projectile, 6-inch Carpenter A. P. shell, hardened to middle of bourrelet, of normal weight and dimensions. It struck the plate 58 inches from left edge, 22 inches from bottom, and 24 inches from impact No. 1.

The shell smashed on the plate, point welding in. Estimated penetration, 3.5 inches. The remainder of shell was delivered in fragments in front of target, heaviest piece recovered weighing 6.5 pounds. The plate remained uncracked. The backing and structure remained sound and in good condition. The plate passed by these two shots, and with it the group it represented.

Two additional rounds were then fired.

Round 3.—Charge, 43 pounds; striking velocity, 1975 f. s.; striking energy, 2707 foot-tons; ratio compared with that just necessary to penetrate wrought iron of the same thickness, 4.2.

Projectile, Carpenter special 6-inch A. P. shell of normal weight and dimensions, struck plate 76 inches from left edge, 29 inches from the bottom, 27 inches from impact No. 1, and 18½ inches from impact No. 2. The shell broke up, the ogival and bourrelet much broken, remained in plate and partly welded in. Estimated penetration of point, 6 inches. The remainder of shell was delivered in front of plate, the largest piece recovered weighing 30.5 pounds. No cracks in plate, backing and structure remaining sound and solid.

Round 4.—Charge, 47.5 pounds; striking velocity, 2110 f. s.; striking energy, 3090 foot-tons; ratio compared with that just necessary to penetrate wrought iron of same thickness, 4.8.

Projectile, Carpenter special 6-inch A. P. shell of normal weight and dimensions, hardened to lower edge of bourrelet, struck the plate 90 inches from left edge, 30.5 inches from the bottom, and 14 inches to the right of impact No. 3. This shell, though much shattered, penetrated the plate entirely, and lodged in the first and second tiers of oak backing, nearly all the pieces being in the backing.

The shot hole, about 8 inches in diameter, was very rough and scored in the inside, having its edges scraped off by the surface of the shell and portions of the shell fused in. The back bulge was broken, but the metal indicated considerable toughness.

The plate remained uncracked, the backing and structure remaining in excellent condition. The tests of the plate showed a remarkably fine quality of metal.

The protected cruiser *Minneapolis*, sister to the *Columbia*, made most wonderful speed on her official trial trip on July 13, and far surpassed the records of any ship of her class and size.

The ship ran over the same course that the *Columbia* did, but exceeded that ship's speed.

The weather was very favorable to the trial, there being no wind most of the time, and the sea being smooth.

The start was made at the buoy off Cape Ann about 9.45 A.M., and the *Minneapolis* started off on her race against time with 10 pounds less steam than she was allowed to carry. This was not allowed very long, however, and the speed during the latter part of the run north perceptibly increased, and during the run back was well kept up.

Without the tidal corrections the speed was calculated to be 23.05 knots average, and later was announced as 23.073 knots, an unprecedented speed for a ship of this size.

The Cramps Ship & Engine Building Company, her builders, obtained by this success the sum of $414,600 as premium for the excess of speed over the contract speed of 21 knots.

The Army Equipment Board has recommended the trial of the combined military belt and garment, invented by Colonel Edmund Rice, of the Fifth Infantry. It is remarkably ingenious in its application as a garment, and takes the weight of the cartridges on the shoulders instead of on the waist. It is composed of two sheets of water-proof material shaped into garments, one a close-fitting tunic, and the other a cape hanging from the shoulders. These gar-

ments when not in use are compactly folded into the shape of belts to be carried around the waist, one over each shoulder or in any other way that a belt can be used. To these belts are attached the cartridges, the haversack, and canteen. The combined weight of the whole equipment is less than the weight of the haversack strap, canteen strap, and the belt plate, which last Colonel Rice discards. The water-proof garments can be worn by a man in his shirt sleeves, with his blouse on or over his overcoat, and they save the cost of a cape to the overcoat.

France.

PROGRAMME OF CONSTRUCTION FOR 1894.—The programme of shipbuilding which was adopted in 1892, upon the initiative of M. Barbey, is now being actively carried out. It is the most extensive plan of naval work ever adopted by any power, and provides for the expenditure of two hundred million dollars, distributed over ten years. In the present year the programme calls for the laying down of thirty-two vessels of various classes. Three that should have been begun in 1893,—the first-class cruiser *Jeanne d'Arc*, and the torpedo-boats *Cerbère* and *Ténare*,—will also be placed upon the stocks.

"CHARLEMAGNE" AND "SAINT LOUIS": DESCRIPTION.—The plans of the battle-ships *Charlemagne* and *Saint Louis*, partially described in the NOTES five months since, are now published. They are to be sister ships in all respects, and will be built in government yards, the former at Brest and the latter at Lorient. The dimensions are as follows: Length, 117.5 metres (385 feet 6 inches); beam, 20.5 metres (67 feet 3 inches); depth, 14.87 metres (48 feet 9 inches); draught forward, 7.4 metres (24 feet 3 inches); draught aft, 8.4 metres (27 feet 7 inches); displacement, 11,130 tons (metric, or 10,951 tons of 2240 pounds). In these vessels we see a return to the most pronounced form of ram-bow, which has always been, until recently, a feature of French steam men-of-war. The freeboard is high,—about 25½ feet at the bow and 19 feet aft. The forecastle deck is carried aft, the full width of the ship, to a point a few feet forward of the forward turret. From there the upper works, continuing at the same height, become a superstructure above the true upper deck, and this superstructure extends aft with parallel sides to a point a few feet abaft the foremast. It is then increased in width by two successive steps, ten or fifteen feet apart, the side between the steps being parallel to the midship fore-and-aft line as before, and the second increase of width carrying the side out to the full beam of the ship. This full width continues aft for fifteen or twenty feet, when it is decreased by successive steps like those forward, and finally the superstructure sides are swept in at a 45° angle and end in a segmental bulkhead around the forward side of the base of the after turret. Extending completely across the superstructure at each end, and rising eight or nine feet above it, are two deck-houses, through which pass the masts. Resting on top of these deck-houses, and extending between them, is a strong flying deck. Each mast has two military tops, covered with light shields, in which are mounted rapid-fire guns. On top of the covering shield of the upper top, which shield forms a platform for it, is mounted a search-light. Below the lower top on each mast there is a roomy, circular, lightly-armored observation tower. In the forward one, which is a few feet higher than the other, are voice-tubes, indicators, etc., for the use of the admiral or captain. The one on the after-mast is fitted for the use of the torpedo officer. The conning-tower proper is situated on the flying-deck over the forward deck-house. The voice-tubes from these three towers lead to a central station below, where they may be connected up to others extending to the various parts of the ship.

The protection to the hull proper consists of a water-line belt of thick armor extending from stem to stern. Its average width is 2 metres (6 feet 7 inches),—0.5 metre (20 inches) above the load water-line and 1.5 metres (4 feet 11 inches) below. The maximum thickness amidships is 40 centimetres (15.75

inches). This thickness is carried from the upper edge to 0.2 metre (8 inches) below the load water-line; from that point the thickness decreases to 25 centimetres (9.84 inches) at the lower edge. Above this a light belt, 75 millimetres (2.95 inches) thick and 1 metre (3 feet 3.9 inches) wide, extends forward from the stern, about two-thirds the length, to a point a little abaft the foremast. From this point this thin belt extends up—about double its previous width—to the under side of the main deck and is continued forward over the ram. Around the stern, from the top of the light armor to the under side of the deck above, the side plating has a thickness of 20 millimetres (0.79 inch). Behind the light armor belt, resting on the thick armor deck, and extending completely around the ship, is a coffer-dam 1 metre (3 feet 3.9 inches) in height. There are two armor decks: one, covering the top of the thick armor belt from stem to stern, is 9 centimetres (3.54 inches) thick; the other, also complete, is at the level of the lower edge of the belt, and is 4 centimetres (1.57 inches) thick. This latter deck is but a development of the splinter deck which has been fitted over the boilers and engines in nearly all recent French ships. All of the machinery and vitals of the ship are below the lower armor deck. The space enclosed between the decks is closely subdivided. The protection to the battery is given below.

The main battery consists of four 30-centimetre (11.81-inch) guns, mounted in pairs in turrets on the midship line,—one forward, one aft. These turrets are 40 centimetres (15.75 inches) thick, oval in plan, and eccentrically pivoted to balance the weight of the guns. The forward guns are 8.5 metres (27 feet 11 inches) above the water-line and the after ones 6.5 metres (21 feet 3 inches). The auxiliary battery consists of ten 14-centimetre (5.5-inch) r. f. g., and six 10-centimetre (3.91-inch) r. f. g. Eight 14-centimetre guns are mounted in the superstructure, four each side, in the angles formed by the successive cutting away of the superstructure forward and aft from amidships where it extends the full width of the ship at the upper deck. This arrangement allows four to be fired ahead, or on each bow or beam. Two 14-centimetre guns are mounted on the superstructure, one each side amidships. The 14-centimetre guns are protected by side-plating 7.5 centimetres (2.95 inches) thick and by shields on the guns. The battery in the superstructure is further protected against raking fire from forward by a thwartship bulkhead, also 7.5 centimetres thick, placed just forward of the forward pair of guns; and they are also shielded against fragments of bursting shells, etc., by splinter bulkheads and partitions worked around each gun. The 10-centimetre guns are all mounted on the flying-deck, one on each side, near the forward and after ends, and one on each side amidships. They are unprotected either by plating or shields. Ready supply of ammunition to all the guns is provided by ammunition-hoists and tubes discharging close to the breech of each gun. The secondary battery consists of sixteen 3-pounder r. f. g. and eighteen 1-pounders (some accounts say ten 1-pounders and eight 37-millimetre revolving cannon). Eight 3-pounders are mounted on the main-deck, four each side. The after pair are in sponsons and have stern fire. They are the only ones which can be trained parallel to the line of the keel. The other eight are mounted in the middle tops. Three 1-pounders are mounted at each end of the flying-bridge, one in each side of each of the deck-houses supporting the flying-deck, and the remaining eight in the upper tops. There are four submerged torpedo-tubes, two forward, two aft; and six above-water tubes, one on each bow and quarter and one on each side amidships. Abreast each above-water tube, for a few feet forward and abaft the torpedo-port, the armor of the upper belt is carried up to the deck above, thus affording protection against high explosive shell and the projectiles of small rapid-fire guns.

Three screws are fitted. The shafts all lie in the same horizontal plane, and the engines—four-cylinder, triple-expansion—are placed abreast each other in three water-tight compartments. Steam is furnished by twenty Belleville boilers, of which eighteen are below, arranged

in four fire-rooms; the other two, for auxiliary purposes, are located on the armor-deck. The anticipated power of the machinery is 14,000 I. H. P., and the expected speeds are 18 knots with forced draft and 17 knots with natural draft. The coal supply at load draught is 680 tons, and the total capacity 1100 tons. It is estimated that 680 tons will give a steaming radius of 4000 miles at 10 knots, but this is hardly reasonable,—300 will probably be found to be nearer.

The cost of these two battle-ships is put at 27,240,000 francs ($5,066,640), of which 719,000 francs ($133,734) will be spent in 1894.

"SURCOUF": ALTERATIONS; TRIALS WITH PETROLEUM.—The use of a petroleum-jet as an auxiliary to coal has proved very satisfactory on the *Surcouf*. The trials lasted two hours each, and only two boilers were used. The speed attained while using the petroleum-jet was 13.5 knots, with coal alone only 8 knots. The *Surcouf* has been in the hands of the dock-yard people for some time, and a number of alterations and improvements effected, among these the addition of an armored conning-tower and electric ammunition-hoists. A submerged torpedo-tube has been decided upon, and will probably be fitted in the stern.

"SFAX": NEW BATTERY.—The battery of the *Sfax* has been removed, and will be replaced by rapid-fire guns of the same calibre.

"FULMINANT": REFIT.—The armored coast-defense-ship *Fulminant* has been thoroughly overhauled and refitted, and new boilers have been placed on board.

TORPEDO-BOAT NO. 171: TRIAL; DESCRIPTION.—The trial of first-class torpedo-boat No. 171, built by Normand, of Havre, took place on February 14. The speed developed during a three-hours' run was 24.38 knots. The contract requirement was 21 knots, but 23 knots were anticipated. The dimensions are as follows: Length, 118 feet; beam, 13.2 feet; draught, 8.7 feet; displacement, 79 tons. The engines are twin-screw, and were expected to develop 1300 I. H. P. The coal capacity is 10 tons. The armament consists of two torpedo-tubes and two 1-pounder rapid-fire guns. The complement is 21 officers and men.

"ALGER," "COSMAO": SPEED IN SERVICE.—The protected cruiser *Alger* is reported to have made 19.6 knots since she has been attached to the Mediterranean Squadron, and the *Cosmao* is said to have frequently exceeded 20 knots. It must be remembered, however, that speeds developed in service are ordinarily measured by patent logs, and the reported result is usually in excess of the actual performance.

L. S. VAN DUZER,
Lieutenant U.S.N.

PHILIP ANDREWS,
Ensign U.S.N.

SERVICE SALAD.

Luyties Brothers & Kessler.

CONSOLIDATION of the wine and spirit business carried on by

MESSRS. G. AMSINCK & Co.

and the business of

MESSRS. LUYTIES BROTHERS,

under the firm name of

LUYTIES BROS. & KESSLER.

GERHARD LUYTIES,
HENRY E. G. LUYTIES,
WILLIAM KESSLER,
} General Partners.

GUSTAV AMSINCK, Special Partner.

It is with great pleasure that we announce that the above consolidation will take place on November 1, 1894.

The large business which both of these houses have done will then be united, and will in future be carried on under the firm name of

LUYTIES BROS. & KESSLER,
at 204 William Street,

under the New York and Brooklyn Bridge.

Mr. Gerhard Luyties having made his home in Europe since 1889, the task of conducting our last establishment became too burdensome for one man, no matter how energetic. The consolidation as above will divide the labor between Messrs. Henry E. G. Luyties and William Kessler, and will enable them to carry on with full force and redoubled energy the magnificent business established by both houses, and enjoy the benefit which years of hard work, the highest possible reputation, and the greatest business liberality assures to them.

We are convinced that all those who have the pleasure of knowing the gentlemen will unite with us in tendering their best wishes for the success of the movement which has brought about this consolidation.

Mr. Gerhard Luyties will conduct the export business in Hamburg, and will also give personal attention to the purchases of foreign goods, as he has done heretofore.

Mr. Gustav Amsinck, who has for many years left the entire management of the wine department to Mr. William Kessler, does not take any active part in the new business, but shows his great interest in its welfare by becoming a *special partner*.

We conclude by saying that we can well compare the solidity of Luyties Bros. & Kessler with the foundation of the Brooklyn Bridge, under which their unique establishment, now perfected in every detail, is carried on.

May the new firm enjoy continued and increased prosperity.

The Vision.

SOMETIMES when I sit musing all alone
The sick diversity of human things,
Into my soul, I knew not how, there springs
The vision of a world unlike our own.

O stable Zion, perfect, endless, one,
Why hauntest thou a soul that hath no wings?
I look on thee as men on mirage-springs,
Knowing the desert bears but sand and stone.

Yet, as a passing mirror in the street
Flashes a glimpse of gardens out of range
Through some poor sick-room open to the heat;
So in our world of doubt, and deathless change,
The vision of eternity is sweet,
The vision of eternity is strange!

MRS. JAMES DARMESTETER.

The Loss of H.M.S. "Victoria."[1]

AN ANNIVERSARY LAMENT, JUNE 22, 1894.

I.

DEEP, buried deep,
In calm untroubled sleep,
Beneath the waves they loved, our brothers lie.
Far down, alone,
Each severed from his own,
They rest in peace, whose duty was—to die.

Shall we forget,—
While graves with tears are wet,—
The men who filled for us an ocean grave?
Or much condemn
The Chief who died with them,
And sacrificed the life he would not save;
Who, when he erred,
Pronounced his own death-word,
And left a name, at least among the brave!

II.

Are poets gone?
Shall Lycidas[2] alone
Deserve the poet-shroud of Milton's tears:
Or they who died
Sunk low with England's pride[3]
Share Cowper's fame, and cheat the jealous years?

—The months have sped:
What prophet-voice has said
In living words, *their memory shall not die?*
Can none to-day
A worthy tribute pay
To England's loss, and England's bitter cry;
And shall no soul
Words into music roll,
And utter forth a dirge, for all, for aye?

III.

Oh fatal skill
Devising ways to kill!
Too sure that ram to strike through steel and all!
More hope had they
On whom in battle-fray
The dreaded phalanx of the Greeks might fall.

All forms of death
Cut short the struggling breath
Of those brave souls, who, as in stress of fight,
Were overborne,
By whirling engines torn,
Or dragged in darkness down, from life and light.
Yet short their pain:
And till they rise again
The sea shall guard the curtain of their night.

IV.

They sank to rest;
And on their bosom pressed
The many-fathomed ocean's weary weight;
They rose to fame;
For in their death their name
Shall ever stand with England's honored great.

Nor mean their tomb:—
Where Solitude and Gloom,
Twin-spectres, fill the spaces dim and vast,
Where none may gaze,
Nor careless hand upraise
To stir the sleeping forms whence life has past—
There close they lie,
With all their panoply,
In peaceful glory wreathed, while earth shall last.

V.

The storms may rave
Above that lonely grave,
The waves may roar and lash themselves, in vain;
For far below,
The wrecks of long ago
Rest undisturbed where night and stillness reign.

Above their head
Men think not of the dead,
But toil and danger face, the ocean o'er,
Till comes the day
When each must pass away,
As passed those brothers, to the unknown shore,
Where all is peace,
Where surface-discords cease,
And silence broods, till time is known no more.

[1] Reprinted from *Blackwood's Magazine*, by permission of the Leonard Scott Publishing Company of New York, the American publishers of *Blackwood's Magazine*.

[2] Drowned in the Irish Channel.

[3] The "Royal George."

Planting the Standard

All hail Columbus! Behold the great navigator as he lands. The perils of the deep are past. The clouds of fear have vanished. The night of gloom has ended. In the heavens the sun of success shines resplendent. Morning has dawned.

Imperiously the banner of haughty Spain greets the daylight. Upon its fluttering folds are inscribed the destinies of a new world. Its gleaming surface marks a long advance in the evolution of the human race. It tells a story of prophecy unparalleled, of developement unapproached in the fullness of recorded time. It crowns with triumph the efforts of genius.

The World's Fair contained no finer statue of the great discoverer than this colossal figure. It commanded from its pedestal the eastern entrance to the Administration building. The majesty of its dimensions, the vigor and aggressiveness of its expression and the artistic finish of its composition made it admired as a genuine sculptural triumph.

Another Standard Proudly Displayed

at the Fair was that of

Dr. Price's Cream Baking Powder

A Standard of Excellence for Forty Years.

It was the standard of unequalled strength, perfect purity and wholesome results. **The award to Dr. Price's of highest honors at the Fair** furnishes conclusive evidence of its superiority over all other baking powders.

Mellin's Food Children

everywhere are the best advertisement of Mellin's Food: with their sound bodies, straight limbs, bright eyes, plump cheeks and fresh, radiant faces, they are the highest types of happy, healthy childhood, and the best evidence that Mellin's Food fulfills every requisite of a food for Infants.

Our book for the instruction of mothers sent free on application.

DOLIBER-GOODALE CO.,
BOSTON, MASS.

VI.

In that last hour,
When the almighty power
Of that Great Chief above shall signal make,
With sudden dread,
The sea shall yield her dead,
And all that sleep in ocean deep shall wake.

No error then,—
No orders strange to men
Who here with honest, earnest hearts have striven;
But each shall know,
And judge, his life below,
And to each soul its meed of praise be given;
For God above,
In His prevailing love,
To erring men has opened highest heaven.

VII.

All held their breath
When those sad words of death
Were flashed the waves beneath, "'Victoria' gone,"—
And kindness owed,
With ready hand bestowed,
On those who husband lost, or sire, or son.

And if with tears
Were mingled secret fears
Of fate deserved, or blame we could not hide:
—Respect the dead!
Let no harsh word be said
Of him, who cannot now the doubt decide:
For this we know,
Nor need we farther go,—
One brave soul erred where all were brave
—and died.

EDW. H. HORNE.

The Secret of the Little Big Horn.

No, we'll never learn the story in our hearts entwined with glory,
Of Custer's last great conflict with the worst of savage foes;
That our troopers gave them battle, that they fell like slaughtered cattle,
In all the Seventh's roster and the later history shows.

King's and Godfrey's thrilling chapters
—wrung from foemen by their captors—
Do credit to brave horsemen who most keenly felt that blow;
But "Comanche[1]" reft of rider has trailed on to pastures wider,
The precious details bearing we so earnestly would know.

We have ever spurned the fable penned upon traducer's table,
By rector breathed in service o'er a silent hero's dust.
Custer disobeyed no order! We who knew him on the border,
The loaf to those relinquish who're unworthy of this crust.

Brave soldiers gone before us, we'll chant your praise in chorus,
Until the trumpet calls us to your peaceful camp on high;
And we'll rally to that muster with the faith in you and Custer
We had when grieving for you where the War Bonnet flows by.[2]

EDWARD L. KEYES.

Tuscan Skies.

(*From the Academy.*)

"Dolce color dell' oriental zaffiro."

THE gross Etruscan felt within these skies
Only a fiery finger that pursued
His body till the glutton soul renewed
Its pastime in the painted tomb. Such lies
Their augurs spake to Heaven. Otherwise
The seer of Florence saw, whose spirit, thewed
By trial, soared unto the heights and viewed
The azure light that fell from paradise.
For, lo! Italia, risen from the hell

[1] "Comanche" (now dead), the horse ridden by Captain Keogh, of the Seventh Cavalry, was the only living thing of Custer's command that escaped from this fight.

[2] After an arduous scout of six weeks, the Fifth Cavalry was encamped on War Bonnet Creek, Wyoming, when, on July 7, 1876, the sad news of Custer's fight of June 25 was first borne to them.

Of heathen gods and temples, dead and bare,
Awoke and mounted to the ardent air;
By Roman virtue purged and taught to dwell
Aloof from earth, she read with chastened eye
A holier religion in her sky.

The Grave of Marshal Ney.

In Père la Chaise, where jasmine blooms
And sheds its fragrance o'er the tombs,
The tourist from our friendly land,
With red-bound guide-book in his hand,
Oft seeks the grave
Where no flags wave,
Of th' bravest of Napoleon's band.

No blazonry adorns his fame,
No stone records the hero's name,
But he, in that neglected square
Of soldier's grand insignia bare,
Lies 'neath the sod
Where grasses nod
And breezes sound like bugles' blare.

Brave Michel Ney, who won the day
On many a field of desperate fray,
Spurred by Napoleon's eagle glance,
Marshal of proud imperial France,
Brilliant thy dreams
As bayonet gleams,
Or clash of sword and flash of lance!

Of Austerlitz and Prussia's might,
A host at morn, a horde at night!
Of Wagram whose artillery roar
The nations heard from shore to shore!
Of Waterloo,
Where thou wast true
Unto thy emperor to the core!

Did Wellington and Blücher feel
A foeman worthier of their steel
In all their long career of war
Than when that day of blood they saw,
Far in the front
To bear the brunt,
Ney led the Guard in death's grim jaw?

Hail to the hero, through and through,
Loyal as brave, and brave as true
Whom, daring for his emperor all,
The allies shot, and o'er whose pall
Incense upcurled
And flags were furled
As France bewailed her marshal's fall!

David Graham Adee.

For Weak Women.

There is no preparation in the world that strengthens weak mothers like Scott's Emulsion. It is beneficial in any form of emaciation or wasting, but it is especially helpful to mothers and nurses who are nursing babies. It gives them strength and also makes their milk rich with the kind of nourishment all babies need.

Scott's Emulsion

is the essence of nourishment. It prevents excessive wasting. It possesses food properties which are essential to all babies and all growing children, and which in adults makes the system strong enough to cope successfully with Emaciation, Coughs, Colds, Weak Lungs, Bronchitis, Loss of Flesh, Blood Diseases and

Any Condition of Wasting.

Scott's Emulsion is not a secret compound. Its formula is endorsed by all physicians. Babies and children love the taste of it.

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BALTIMORE, MD.

MILITARY ORDER OF THE LOYAL LEGION OF THE UNITED STATES.

Companions of the Loyal Legion are invited to contribute to this department. News of the Commanderies is always welcome, but suggestions likely to inure to the benefit of the whole organization are of higher value, and therefore particularly desired. The pages of the Loyal Legion Department of the "United Service" are always at the service of members of the Order desiring to discuss matters of general interest to their comrades of the Military Order of the Loyal Legion.

Maine Commandery.

Stated meeting held September 5, 1894.

To THE FIRST CLASS.—Lieutenant-Colonel **Henry R. Millett**, U.S.V.; Captain **Edward M. Robinson.**

To THE FIRST CLASS (by inheritance).—**Arthur Chapin.**

California Commandery.

Stated meeting held August 29, 1894.

Admiral **Charles C. Carpenter**, U.S.N.; Colonel **Joseph Henton**, U.S.A.; Captain **John Drum**, U.S.A.; Lieutenant **Henry C. Reno**, U.S.V.; Lieutenant **John Y. T. Smith**, U.S.V.; Lieutenant **George A. Calhoun**, U.S.N.

To THE SECOND CLASS.—Captain **Hobart K. Bailey**, U.S.A.

Vermont Commandery.

Stated meeting held Sept. 11, 1894.

To THE FIRST CLASS.—Colonel **D. K. Andross**, U.S.V.

To THE FIRST CLASS (by inheritance)—**Archie Halbert Beach.**

To THE SECOND CLASS.—**James F. Hooker.**

The members of this commandery, who are also members of the Commandery-in-Chief, are:

Commander, Colonel **Amasa S. Tracy**, U.S.V.; Ex-Commanders, Brigadier-General **Stephen Thomas**, U.S.V.; Brevet Brigadier-General **William W. Henry**, U.S.V.; Senior Vice-Commander, Lieutenant-Colonel **Franklin G. Butterfield**, U.S.V.; Ex-Senior Vice-Commanders, Major **Levi G. Kingsley**, U.S.V.; Captain **Pearl D. Blodgett**, U.S.V.; Junior Vice-Commander, Major **John L. Barstow**, U.S.V.; Ex-Junior Vice-Commanders, Captain **Urban A. Woodbury**, U.S.V.; Brevet Lieutenant-Colonel **George W. Hooker**, U.S.V.; Recorder, First-Lieutenant **William L. Greenleaf**, U.S.V.

Sons of Companions.

Attention is invited to the following by-law of the Illinois Commandery:

"The Companions of this Commandery shall have the privilege of bringing to the stated meeting (at the conclusion of the business meeting) of this Commandery, in the month of June in each year, such of their sons, *under the age of twenty-one years*, as would, upon attaining their majority, *be eligible* to membership."

Companions intending to be present with their sons are requested to notify the Recorder at an early date, that the proper provision may be made for them.

THE following is promulgated for the information of the Order:

CHANGES IN MEMBERSHIP, QUARTER ENDING JULY 31, 1894

COMMANDERY OF	GAIN.			LOSS.			NET GAIN.			NET LOSS.			MEMBERSHIP, July 31, 1894.			
	First Class.	Second Class.	Third Class.	First Class.	Second Class.	Third Class.	First Class.	Second Class.	Third Class.	First Class.	Second Class.	Third Class.	First Class.	Second Class.	Third Class.	Total.
Pennsylvania	12	6		10			2	6					1032	113	5	1150
New York	16	3		17	1			2		1			1069	68	4	1141
Maine	2						2						143	7		150
Massachusetts	7			2			5						809	54	14	877
California	4			6		1				2		1	571	48	10	629
Wisconsin	2			1			1						208	6	2	216
Illinois	8	3		3			5	3					498	61	5	564
District of Columbia	9	1		7	1		2						618	37	1	656
Ohio	3			5						2			844	59	4	907
Michigan	2	1		2				1					262	12	3	277
Minnesota	1			1									286	24	3	313
Oregon	1			1									73	9		82
Missouri	4			4									279	20	5	304
Nebraska		2						2					139	17	3	159
Kansas	3	2		5	3					2	1		238	23	4	265
Iowa				1						1			154	9	4	167
Colorado	4	2					4	2					184	19		203
Indiana	5						5						210	15	1	226
Washington													48	13		61
Vermont	1						1						89	12		101
Totals	84	20		65	5	1	27	16		8	1	1	7754	626	68	8448

NET GAIN.

First Class	19	
Second Class	15	
		34
Less Loss in Third Class		1
Total net gain		33

Total April 30, 1894 8415
Total July 30, 1894 8448

By command of LUCIUS FAIRCHILD, Brigadier-General U.S.V.,
Commander-in-Chief.

JOHN P. NICHOLSON, Brevet Lieutenant-Colonel U.S.V.,
Recorder-in-Chief.